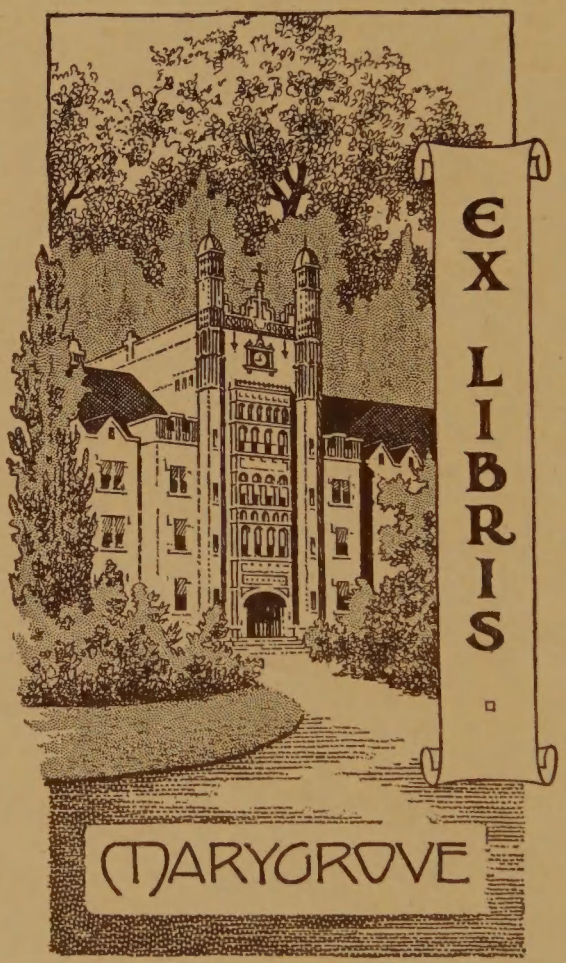
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THE FOUNDATIONS OF PSYCHOLOGY

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THE FOUNDATIONS OF PSYCHOLOGY

BY

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TO EDWARD HERRICK GRIFFIN, D.D., LL.D.

PROFESSOR EMERITUS OF THE HISTORY OF PHILOSOPHY, AND SOMETIME DEAN OF THE COLLEGE FACULTY, IN THE JOHNS HOPKINS UNIVERSITY

MY FIRST TEACHER IN PHILOSOPHY AND PSYCHOLOGY

I DEDICATE WITH SINCERE RESPECT AND AFFECTION THIS MY FIRST PUBLISHED VOLUME

PREFACE

The present volume is designed to serve a twofold purpose —(1) as a textbook in advanced courses in general psychology, and (2) for general reading on the subject of the nature and methods of mental science. The work contains matter not usually found in the ordinary brief textbooks and manuals of psychology, and yet it is the endeavor of the author to present his material in such a form that it may be grasped by any interested reader who is familiar with those facts of the science which may be found recorded in any good textbook.

The only work in English which in any degree covers the ground that I myself have traversed is the book by Boris Sidis on *The Foundations of Normal and Abnormal Psychology.* But though reference is frequently made in the following pages to this valuable work, a comparison of the tables of contents of Dr. Sidis's book and my own will be sufficient to indicate our differences in plan and aim.

Another writer frequently cited in the ensuing pages is Hugo Münsterberg, and I wish to record here my deep sense of indebtedness to him for his illuminating work on the great problems of philosophy and of natural and mental science. This indebtedness is manifested many times in the ensuing work, notwithstanding my differences with him on many points. I think it may truthfully be said that in his death America has lost its one great theoretical psychologist—and in so writing, I say nothing of his invaluable work as a pioneer in the fields of practical and applied psychology.

All quotations are in the exact words of the original writers, though I have not hesitated to change the marks of punctuation when such change has seemed to be in the interests of clearness. Words in square brackets [ ] have been added by the author of this book.

Sections are numbered consecutively throughout the book, regardless of chapters, and numbers in parenthesis in the text refer always to those numbered sections. Chapters also are numbered consecutively, regardless of the larger "Books." Most of the chapters are broken up into "Divisions," the numbering of which starts anew in each successive chapter.

I wish to acknowledge with gratitude the assistance of my wife in the preparation of the manuscript, and of my father-in-law, Mr. D. W. Linch, in the drawing of some of the cuts; and also the interest of my colleagues, Professor M. M. Curtis and Professor H. A. Aikins.

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INTRODUCTION

"There are periods in the growth of science when it is well to turn our attention from its imposing superstructure and to carefully examine its foundations." With these words Karl Pearson opened the preface to the first edition of his *Grammar of Science,* and they are fitting words with which to introduce our present study also. This is an age of great development in all fields of scientific investigation, and in no field more strikingly than in that of psychology. But although there are many builders of foundations—such men as Pearson, More, Enriques, Mivart, Poincaré—it is chiefly the physical and biological sciences in whose bases they are interested, and rarely are the separate claims of psychology given their just due, if indeed they are considered at all.

Nor are the psychologists themselves altogether free from blame in this matter. Justly proud of the freedom which their science now enjoys—liberated comparatively late in time as it was from the shackles of metaphysical speculation, and resting securely upon the hard rock of empirical fact—they are giving their time and attention almost entirely to the development of the experimental method and the discovery of individual facts by its means, to the serious neglect of the broader significance of these facts. I do not mean to imply that there is *no* interest among psychologists in the foundation principles of their science, but I do mean that the interest is relatively slight, and that what work is being done in this field is grievously lacking in unity either of aim or of result. We find, in other words, not one science of psychology but many—structuralist psychologies, functionalist psychologies, behaviorist psychologies and others, each one claiming to be the truly scientific psychology, but having aims and ideals inharmonious with all the rest. Experimentation goes merrily on, building

up a truly "imposing superstructure" where a half-century ago was nothing at all, but instead of one foundation fitly joining all the parts a number of distinct and mutually destructive foundations. What psychology needs most of all today is not so much more superstructure as a stronger foundation, not so much an analytic examination of facts as a synthetic view of the entire field.

It is for the purpose of at least securing a synthetic glimpse if not a complete view of this field that the present work has been undertaken. The situation and problem are these: First, as to the situation, psychology is today undoubtedly an empirical, inductive, observational, experimental, positive and concrete science. It is no longer a branch of philosophy, nor is it necessarily any more closely affiliated with philosophy than are any of the physical or biological sciences; for all sciences, non-psychological as well as psychological, must have a philosophical foundation. But at this point arises the problem: is psychology also a distinct science among its sister sciences? Is it, or can it become, as independent of physiology, of neurology, of biology, as it is of philosophy? Is the introspective study of the mind scientific psychology, or is the latter term applicable only to the experimental study of behavior? Certainly the tendency today is strongly toward the second of these alternatives, but as over against this tendency it is the underlying purpose of this book to defend the thesis that scientific psychology is independent alike of metaphysics on the one hand and of the biological sciences on the other, that there can be a complete science of psychology on this independent basis, and that introspection is really scientific and the distinctive method of scientific psychology; and to undertake the task of establishing some of the essential principles upon which such a complete and independent science of psychology must and may be built up.

The work will be divided into three parts; discussing (1) the various definitions or conceptions of psychology which have been suggested in the past and are being expounded to-

day, with the aim of drawing a synthetic and positive conclusion as to the merits of these various conceptions; (2) the field of scientific psychology, its distinctiveness from metaphysics on the one hand and from physical and biological sciences on the other; and (3) the postulates necessary for the construction of a scientific psychology, with especial attention to the problems of parallelism, psychical causation, and the subconscious. And in closing these introductory remarks I again emphasize the fact that my aim is primarily not critical but constructive, and not constructive in the sense of seeking to build a new foundation for psychology but of synthetizing the foundations upon which the science is even now built. For the chief need of psychology today, and of philosophy too, is by no means the establishment of new schools, but the synthesis of the diverse but perfectly harmonizable truths that the great thinkers of the past have contributed to the treasury of present day knowledge.

BOOK I

THE DEFINITION OF PSYCHOLOGY

CHAPTER I

Historic Concepts of Psychology

1. *The Two Most General Concepts of Psychology.*

1. Since the beginning of man's interest in the study of his own mental life that interest has taken a twofold form, one *metaphysical* and the other *scientific*. The metaphysical interest, springing primarily from the religious needs of man, the hope of immortality and the belief in a soul life surviving the death of the body, gradually takes the form of what we know later as *Rational*[1] psychology: the scientific interest, arising out of man's intellectual nature, fulfilled in a truly scientific procedure, takes the form of what has long been known as *Empirical*[1] psychology. These, then, are the two most general concepts—conceptions or ideals—of what psychology is and means, that have appeared in the history of that branch of human knowledge.

2. *Rational Psychology* has for its problem the nature, origin, and destiny of the soul. As such it is a branch of philosophy, and not strictly speaking a science at all.[2] Philosophy has among its various problems that of the general nature of reality, the part of philosophy which studies this problem being metaphysics. As the soul, if it exists at all, is one of the

[1] The use of these terms comes from the old antithesis in the theory of knowledge between reason and experience, "empirical" being the adjective corresponding to the noun "experience." However, the words have a well-established meaning, and that which we term "empirical psychology," as will soon appear, has by no means always been "scientific": hence it is better to retain the terms chosen than to reject them for no better reason than their merely etymological ambiguity.

[2] The significance of this distinction, which is a distinction of the first importance, will appear later (*v.* especially, Chap. IV).

most important of all realities, rational psychology, which has the soul for its subject-matter, is one of the chief divisions of metaphysics. All the individual truths about the soul or mental life which rational psychology derives, therefore, are deduced from the general concept or definition of what the soul itself is.

3. *Empirical Psychology,* on the contrary, is interested in the facts of mental life just as they appear in our experience for their own sake, without inquiring into the real inner nature of the soul, or even caring whether there is such a reality as a soul. Rational psychology asks what mind or soul *is,* empirical psychology asks what the mind *does* or how it *acts.* Hence, the latter usually discards the word "soul" altogether, substituting for it such terms as "mind," "self," or "consciousness." It has come, therefore, in recent years to be spoken of, by its adherents proudly and by its critics reproachfully, as a "psychology without a soul." This designation serves clearly to mark off the empirical from the metaphysical type of psychology, and at the same time to emphasize the fact that empirical psychology is by its very nature incomplete and one-sided, and by no means, as its devotees too often claim, the last word on the subject of mental life. It also warns us not to allow ourselves to imagine for one moment that because rational psychology is older than empirical, and empirical psychology alone fashionable today, the problems and methods of metaphysics are therefore no longer of any importance. There is as valuable a place for metaphysical psychology in the world of thought today as there ever was, and there always will be such a place. This point, however, must be postponed until a later period in our investigations.[3]

2. *The Schools of Rational Psychology.*[4]

4. The schools of rational psychology are distinguished primarily according to their conception of the nature of the

[3] *V.* Chap. IV.

[4] *Cf.,* throughout this chapter, Table I, on p. 21.

mind: hence a classification of them is rather a classification of theories of mind than of concepts of psychology. On the question of the nature of the soul there have always been two schools in rational psychology—spiritualism and materialism; and on the question of the degree of relationship between the soul and the body, two—dualism and monism. *Spiritualism* in psychology is the doctrine that all the phenomena of mental life are manifestations of a non-material soul, *materialism* in psychology is the theory that all psychical processes are modes or manifestations of matter. According to the *dualistic* conception, mind and matter are two sharply opposed substances: according to the *monistic* conception, mind and matter are in some way identified, as different manifestations of one form of reality. It follows from these definitions that dualism if consistent must necessarily be spiritualistic in its theory of the soul, but that monism may be either spiritualistic or materialistic according as this "one form of reality" is regarded as primarily spiritual or material in nature. There are, then, ultimately but three distinct schools of rational psychology—Dualism, Spiritualistic Monism, and Materialism. Dualism is the original school, the two forms of monism arising out of the necessity for resolving the inevitable difficulties of the dualistic position.

5. *Dualism.*—The dualistic view of human nature appears early in the history of the race, the experiences of dreams and of the permanent sleep we call death naturally leading to the conviction that man has a soul which, though bound up with the body during the waking hours, wanders freely out of the body in sleep, and at the time of death becomes separated from that body forever. Primitive conceptions of the soul are, indeed, crude and in many ways *materialistic,* the "soul" being thought of as little more than a detachable shadow of the body; but as time goes on the concept becomes more and more spiritualized, until in the systems of Plato and Aristotle we have a purely idealistic notion of what constitutes the essential element of human nature. According to Aristotle, how-

ever, the soul is not so much an outside principle separate from the body, but rather is identified with the vital principle which dwells in and energizes the body. The psychology of Scholasticism continues this notion of *immanent dualism,* as we may call it, and it is not until the time of Descartes (1596-1650) that the dualistic conception reaches its logical climax in the *transcendent view* that the soul is a substance entirely distinct from the body and interacting with it from outside.

6. *Monism.*—It is this problem of interaction and the difficulty of explaining it that have led to the formulation of the monistic theory that mind and matter are not distinct realities, but different manifestations of one fundamental reality. Just as the dualistic theory of the universe is in its primitive form materialistic in its concept of the soul, but can become consistent only when the latter concept has been spiritualized; so the monistic theory of the universe as we first find it in Spinoza (1632-1677) is a *neutral* type of monism, the universe being regarded as fundamentally neither spiritual nor material, but such a general monistic metaphysics inevitably involves either a spiritualistic or a materialistic psychology—whatever the universe at large may be, the soul must be either material or non-material.

Dualism being necessarily spiritualistic, *spiritualistic monism* is the natural heir of the older, and by Spinoza and his adherents discarded, view of the soul. As representatives of this concept after Spinoza we may name especially Leibniz, Berkeley, Kant and his followers, and Lotze. In reaction against this view is the opposing doctrine of *materialism,* traceable to its origin in the Greek philosopher Democritus, and finding modern representatives of quite different types in Hobbes, Diderot, Moleschott, Büchner, Haeckel, and others.

7. But it would take us too far afield to dwell upon the distinction and relationship between the various schools of rational psychology, or to so much as hint at a comparison and criticism of them. Such a task belongs to the philosopher, and not to the psychologist in the current sense of that word.

But it is well to be familiar with the meanings of these philosophical concepts, not only because this makes the far different problems of empirical psychology stand out all the more clearly by contrast, but also because those philosophical problems still exist and still cry for solution. I repeat that empirical psychology has not superseded rational psychology, but has merely added itself to the latter. Today the term "psychology" when used by itself always, and rightly, means empirical or scientific psychology; and the term "rational psychology" is nowadays little favored, the broader term "metaphysics," of which rational psychology is one branch, doing service for the parts as well as the whole, because of the inextricable interrelation of all metaphysical problems. But both adjectives are of permanent value, notwithstanding.

3. *The Development of Empirical Psychology.*

8. By empirical psychology is meant a study of mind which is based on observation of the facts of mental life, not derived deductively from general metaphysical concepts. It is, or aims to be, scientific rather than philosophical in that it starts with facts of observation, and aims to determine the connections between these facts and so far as possible to formulate the laws which govern these connections.

Empirical *methods* of studying mental life were employed as early as Plato and Aristotle, in both of whose writings valuable comments on mental phenomena, with analyses of the mind and classifications of psychical processes, are to be found. Especially is this true of Aristotle, to whom we owe the first systematic treatise on psychology. Throughout the middle ages the empirical interest was active along with but always strictly subordinated to, the metaphysical. In fact this is the characteristic feature of Greek, medieval, and most modern psychology before the middle of the last century—empirical methods of study cropping up from time to time, but always in subordination to rational or philosophical interests. Modern empirical psychology may properly be said

to begin with John Locke (1632-1704), with whom the empirical interest was even stronger than the metaphysical, but whose psychology is nevertheless but an outgrowth of his general metaphysical thought. It is not until the latter half—indeed, hardly until the last quarter—of the nineteenth century that psychology finally attains its independence of philosophy and its present status as a distinct science.

9. *Conditions of Scientific Psychology.*—A scientific psychology must not only describe mental facts, it must also explain them. Like other sciences, psychology has passed through two stages in its history—a purely *descriptive* stage, and a descriptive and *explanatory* stage. But even explanatory psychology is not necessarily scientific in the strict sense of the term, so long as psychological facts are explained, as they long were, in terms of philosophical concepts. Two important *transitional schools* which appear in the prescientific period of the history of empirical psychology must therefore be discussed before we are prepared to understand the methods and ideals of modern scientific psychology—the schools of Faculty Psychology and of Associationism.

a. *Faculty Psychology*

10. The so-called faculty theory of the mind in one form or another practically dominates empirical psychology from the very beginning until the eighteenth century, although the word "mental faculty" itself appears for the first time in the system of Christian Wolff (1679-1754).

According to this doctrine the mind is thought of as divided into compartments—faculties or powers—which are regarded as independent forces, and all individual mental phenomena are explained as products or expressions of these faculties. Such class-concepts of modern psychology as sensation, memory, imagination, thought, feeling, will, desire, etc., are regarded by this school not merely as convenient groups of mental processes but as actual forces which produce the phenomena included under those heads. Thus we see because

we have a faculty of sensation, we think by means of our thought faculty, we act by virtue of the fact that our will is an independent faculty which is free from the restraints of physical causation.

Throughout the history of the science, however, there has ever existed a strong tendency toward the reduction of the number of faculties, the many lesser faculties being subordinated to a few ruling ones. The usual groupings have been either into two faculties—one passive and the other active, knowledge and desire or will; or into three—knowledge, feeling, and will.

Such a division of mind is analogous to the traditional grouping of teachers in the universities into the great faculties of philosophy (or arts and sciences), law, medicine, and theology; each being further divisible into a number of lesser faculties—as natural science, history, literature, etc. Just as every teacher is a member of certain of these groups, and acts by their authority; so every psychical process was thought of as a product of some particular mental faculty, and considered to be explained when referred to the proper one.

Of the two groupings, the active-passive division practically dominated the whole history of psychology until the time of Wolff, to whom reference has already been made, and who was the first to employ the term "faculty" and to formulate a systematic doctrine based on that principle. Following him, to John Nicolas Tetens (1736-1807) is due the introduction of the threefold division into intellect, feeling, and will—a third faculty, feeling, being added to the Wolffian two—which, further elaborated by Immanuel Kant, became the ruling psychological concept, on the continent at least, throughout the ensuing century.

11. *Criticism of Faculty Psychology.*—Modern scientific psychology, however, has rejected absolutely the entire faculty conception of the mind and of mental science, and this, I think we can say, for three reasons—

(1) The division of the mind into faculties is an *artificial*,

not a natural, division—a grouping of psychical processes for convenience in study and exposition, not an actual division in the substance or reality of the mind or soul. Modern psychologists recognize that whatever the mind may in its essential nature be, it works, normally at least, as a unit, not as a collection of separate faculties; that every momentary state of consciousness is at the same time a knowing, feeling, and desiring state, the difference between the three being one of phases of a single psychosis[5] rather than of three distinct and separately acting psychical forces; that whenever there is apparent division in the mind, as in the phenomena of so-called dissociation (hypnosis, hysterical somnambulism, etc.) it is a division which actually cuts through all the so-called faculties, each temporary portion of mind being not restricted to one "faculty" but manifesting itself in all the ways that a complete and normal mind would do.

(2) The reference of the various individual processes to the appropriate faculties merely *classifies* them, but does not explain them. It is a common fallacy to think that because we have found the name of a thing, and thereby the class to which it belongs, we have for that reason explained it; but this is far from the case, classification never being equivalent to explanation, but merely pointing the way toward the latter. Mental faculties are merely class-names, then, not causes or forces, and we have no more justification for thinking of the faculty of perception, for example, as causing or producing individual perceptions than we have for thinking of the idea of "man" as causing or producing individual men.

(3) Finally, the whole conception of faculties as causes or forces is a confusion of the empirical point of view with the *metaphysical.* The faculty theory involves the thought that in some way or other the mental faculties are more real—more substantial or permanent—than the individual processes. It

[5] The term "psychosis" should be thought of in general psychology as indicating any single moment of consciousness taken as a whole, the whole state of the mind at any individual moment.

is a theory of what the mind really *is*—viz., a collection of faculties—formulated to explain the mental processes of everyday life. But an explanation of facts formulated in terms of metaphysical concepts is not the kind of explanation which science demands: hence the faculty view has no longer any standing in modern scientific psychology.

b. *Associationism*

12. About the middle of the eighteenth century there appeared in England a new school of empirical psychology known as Associationism, which was destined to play an important part in moulding the science as we know it today. The two concepts with which we are in the present stage of our investigations concerned—that of mental faculties and that of associationism—are undoubtedly the most influential concepts ever proposed in explanation of the phenomena of mental life.

But it is extremely important not to confuse this modern *theory* of association*ism* with the familiar and long recognized *fact* of association on which that theory was founded. The fact of association as a phenomenon of mental life was recognized by Aristotle, and to him we owe the classic grouping of association-phenomena under the three heads of similarity, contrast, and contiguity or temporal succession. That we remember things by associating them with other things, and that we are especially likely to associate objects that are much alike or strikingly different, and events which happen at the same time or in immediate succession, are commonplaces of experience and of empirical psychology throughout its history. It was left to David Hume (1711-1776) and David Hartley (1704-1757), however, to raise this familiar fact into the exalted position of being the central and dominating principle of explanatory psychology, "the sufficient explanation of all conscious experience,"[6] and thus to establish a new school. As-

[6] Calkins, *Introd.*, p. 439.

sociationism as a doctrine is so called because it makes the fact of association the essential principle of mental life.

Of the two British thinkers already named, Hume is to be thought of rather as the builder of the philosophical foundations of associationism,[7] Hartley as the actual creator of associationism as a school of psychology.[8] The central principle of Hume's philosophy was that the entire universe material as well as mental, is merely a collection (i.e., association) of what he termed in psychological language "impressions and ideas"—that that which we call the soul or self ("I") has no substantial reality, but is merely a "bundle" of impressions and ideas, and that the material universe is like the psychical in its constitution. Impressions and ideas are thus the elements of all things, the things themselves being built up out of these elements through "association." These fundamental principles Hartley applies and develops in the more special field of empirical psychology and nerve physiology.

Associationism is primarily and distinctively a *British* school of psychology, all English psychologists of the later eighteenth and most of the nineteenth centuries being influenced by it, of whom we may name as especially representative of this school three—James Mill, Alexander Bain, and Herbert Spencer; but a school of similar type and springing out of the ideas of the British associationists was founded in *Germany* by Johann Friedrich Herbart (1776-1841), and has had quite as profound an influence on continental nineteenth century psychology as the theories of Hume and Hartley have had in Great Britain. In its philosophical foundations Herbartianism differs from Humianism in its acceptance of a soul-substance as the creator of ideas, but this is a metaphysical distinction and on the empirical side the similarities between the British and German schools are far more fundamental than the differences.

[7] First in his *Treatise of Human Nature* (1739).
[8] *Observations on Man* (1749).

13. *Principles of Associationism.*—The tenets of the associationist school will become considerably clearer, however, if we sum them up under the three following propositions:

(1) Every idea[9] is an *independent,* more or less *permanent,* and *revivable* reality. Herbartianism, of course, would reject this proposition as a theoretical statement, but for all practical purposes Herbart accepts the principle.

(2) Every idea is endowed with the power of *association* with other ideas; so that when one member of the group is "revived," the others are revived along with it. This is a statement of the *fact* of association, though psychologists today would not favor the use of the terms "*power* of association" and "revival"; which terms nevertheless accurately represent, I think, the associationist view.

(3) All complex mental processes are explicable on these principles of the permanent reality (Proposition 1) and associative power (Proposition 2) of ideas. This proposition represents the essential distinctive principle of the school that "association is the sufficient explanation of all conscious experiences." It is as characteristic of Herbartian as of British psychology, for according to Herbart all conscious experience is but the result of the constant activity and interaction of ideas which in the unconscious field of the mind come into conflict with one another, the stronger sometimes reënforcing and sometimes suppressing the weaker. Here we have a purely mechanical, almost physical, conception of ideas as real forces in the universe of mental life—the consistent and logical conclusion of the three premises of associationism.

14. *Criticism of Associationism.*—These three principles may be criticized, and must we believe be rejected, on the following grounds:

(1) The doctrine of associationism is a *metaphysical,* not a scientific, doctrine. From this point of view it has no ad-

[9] I use the term "idea" here in John Locke's sense of it, as including all mental states or contents—perception, feelings, etc., as well as what modern scientific psychology calls ideas.

vantage over the faculty-theory, in that it merely substitutes "ideas" for the older "faculties" as the units of mental reality, conceiving these ideas as forces which produce the phenomena of mental life. The metaphysical nature of the doctrine is also clearly brought out in the phrase "power of association," it being impossible to state in empirical terms the nature of such a "power."

(2) On the empirical side, associationism entirely *misconceives the nature of ideas.* Ideas are *not permanent* things, but passing phases of mental life. An idea is an event in time, "belongs to a given moment and *cannot be revived* at another time."[10] My idea of the character and policies of William II may be today in its significance precisely what it was ten years ago, or it may have changed completely, but in neither case is there any actual numerical identity between them. Today's experience of my postage stamp box may be the same as yesterday's, but today's experience is a part of today's stream of consciousness and yesterday's experience a part of yesterday's stream of consciousness; and though I may say the stamp box is today identically the same box as it was yesterday, yet is my experience of it today as a fact of consciousness a different fact from my experience of it yesterday.

(3) On another count is associationism empirically false, in that it *reverses the true genetic order as between the individual ideas and their association.* Ideas are *not independent* realities, existing first in isolation and afterwards combined after a mechanical fashion into groups: rather, ideas always come into the mind as members of complex groups, which may or may not afterward be analysed into their constituent factors. In other words, the relation among ideas is always an *organic* rather than a mechanical relation, the unit being not the individual idea but the total "stream of consciousness"

[10] Calkins, *Introd.*, p. 441. Italics mine.

of which the single ideas are but factors, and distinguishable from the rest only through analysis.

(4) Finally, contrary to the third proposition of associationism, the principle of association is quite *inadequate* to explain by itself all the complex phenomena of mental life.

c. *Modern Scientific Psychology*

15. Empirical psychology does not become truly scientific until it has divorced itself entirely from all metaphysical limitations and presuppositions. As a science, psychology is not interested in the nature of the soul, the reality of ideas, or the explanation of mental phenomena in terms of forces which can neither be experienced themselves nor inferred from what is experienced. Scientific psychology has for its problems solely the discovery of the facts of mental life, the careful description, analysis, and classification of those facts, and the determination so far as possible of the "laws" of their connection (i.e., the formulation of propositions summing up in brief form the *facts* as to their connection).

It is impossible to name any exact date as marking the emancipation of psychology from metaphysics and the birth of psychological science. Suffice it to say that during the last quarter of the nineteenth century and the opening years of the twentieth an advance away from metaphysics has been made of a nature so striking that there can be no doubt whatever that now we have a science of psychology whose right to be called a science in as real a sense as physics, chemistry, biology and all the rest are so called is impregnable.

16. *Extreme Views of Scientific Psychology.*—Two errors, however, are commonly made with regard to this position which must be referred to briefly and overruled before we pass on to more positive considerations:[11] one is that psychology is scientific only so far as it brings the facts of mental life into close and constant dependence upon the facts of nerve physiology, the other that psychology is scientific only

[11] *V.* Calkins; *Introd.*, pp. 442-444.

so far as it uses the experimental methods of the laboratory. Neither of these positions may be admitted, however, and it is one of the main purposes of this book to confute the first of them and insist that there is, and endeavor to demonstrate how there can be, a science of psychology which is quite as independent of nerve physiology on the one hand as it is of metaphysics on the other—all this without denying for an instant the great importance of that science called physiological psychology which has for its subject-matter the relation between mental processes and physiological processes.

As to the claims of the laboratory psychologist, we admit the great value of the psychological laboratory, and that "the most obvious distinction of the present-day psychology is certainly its experimental methods";[12] and yet insist that after all *introspection* is the distinctive method of psychology, and that a psychological experiment can never be more than an arrangement of the conditions for more accurate and useful introspection, just as a chemical or biological experiment is merely an arrangement of the conditions for observation of its phenomena to the best advantage. The true laboratory of the psychologist is his own mind, which he carries about with him always, and the best equipped laboratory building is no more than an external aid to the observation of the workings of his own and other person's minds—just as the telescope is the external aid of the astronomer, or the microscope of the histologist. The difficulties of introspection are, of course obvious, but the claims of some that they are insuperable is, I think, unproven. The matter will be considered at length in the course of the following chapter.

[12] Calkins, *Introd.*, p. 444.

TABLE I

Historic Concepts of Psychology

I. RATIONAL OR METAPHYSICAL PSYCHOLOGY.

A. *Dualism.*

1. *Quasi-Materialistic* (primitive man)
2. *Spiritualistic:* Plato, Aristotle, etc.
   - *a.* Immanent (Aristotle)
   - *b.* Transcendent (Descartes)

B. *Monism.*

1. *Spiritualistic:* Spinoza, Leibniz, Berkeley, Kant, etc.
2. *Materialism:* Democritus, Hobbes, Diderot, Moleschott, Büchner, Haeckel, etc.

II. EMPIRICAL PSYCHOLOGY: Plato, Aristotle, Locke, etc.

A. *Transitional Schools—*

1. *Faculty-Psychology:* Plato, Aristotle; Scholasticism; Wolff, Tetens, Kant.
2. *Associationism:* Hume, Hartley; Mill, Bain, Spencer.
   - *a. German Form:* Herbart, etc.

B. *Modern Scientific Psychology.*

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Associationism—

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Calkins, *Introd.,* pp. 438-442.

Modern Scientific Psychology—

Klemm, pp. 141-155.
Calkins, *Introd.,* pp. 442-444.

CHAPTER II

Current Concepts of Scientific Psychology

1. *Points of View in Psychology.*

17. *Mental Process vs. Mental Content.*—In every experience we may distinguish between the *act of experiencing* and the *object* or "content" of that experience—in other words, between experience taken as *process* and experience taken as *content.* The word "experience" itself is ambiguous, and covers both these meanings. As between the two it will be recognized that the *content* of experience may be, and perhaps always is, extremely complex, and analyzable into a number of simpler components—as, for example, my experience of a symphony, a painting, the World War, or life in general: the act or *process* of experience, however, the experiencing *of* this content, is at every moment a single act of consciousness, a simple and unanalyzable fact.[1]

This distinction between process and content applies equally to experience taken as a whole, and to every individual type or instance of experience. For almost all classes of experiences there are at least two terms in common use, one—usu-

[1] *V.* Dunlap, *A System of Psychology,* pp. 12 f. (*cf.* also his "The Self and the Ego," *Psych. Rev.,* 1914, xvi, 63). "It is often said that the content is not complex, but is simple and unitary; and that the elements into which we apparently resolve it by analysis are really new content brought into existence by our analysis. In stricter language, this really means that while the content which you apprehend is complex, and may be resolved into its elements, the apprehension or experience *of* the content [i.e., the *process*] is not itself a complex made up of the apprehensions of the different elements." For example, the percept of an orange is analyzable into sensations of color, odor, pressure and taste, but the experience of perceiving the orange is not analyzable into an experience of seeing a color *plus* an experience of smelling an odor, etc.—rather the whole orange comes into consciousness in a single experience.

ally participial in form—indicating mental process, and the other—usually a noun—symbolizing content. Thus the terms "perceiving," "remembering," "thinking," "feeling," "willing," etc., refer to mental processes—the terms "percept," "image," "idea," etc., to mental contents. And so also with phrases—the expressions "I think so and so," for example, and "I have such and such an idea" being equivalent, the former expressing the process-side of the same experience and the latter the content-side. In many cases, indeed, there is a third indifferent term which covers both aspects of the experience—such terms as sensation, perception, memory, thought, feeling, and volition.

In all this discrimination between process and content, however, we must not allow ourselves to think of these as separable *kinds* of experience, but rather as merely discriminable *aspects* of experience, quite inseparable in fact. The terms do not in any particular instance refer to separate experiences, but to one identical experience, considered from different points of view.[2] As Titchener expresses it,[3] the term "mental content" refers to the *qualitative* aspect of experience—what kind of an experience it is, whether of a color, a tone, an emotion or an idea; whereas the term "mental act" or "process" refers to the temporal course or *durational* aspect of the experience—the experience as a momentary phase in the mental life of the individual.

But it would be equally an error to ignore, as many psychologists do, the distinction we have been discussing. To many the distinction seems abstract, unreal, and valueless. I gladly admit the first characterization, though deny that it is an objection, as all science must deal to some degree or other with abstractions. As to the second, it may or may not be true, but

[2] To make process and content distinct mental facts would be to fall into a similar error to that of the faculty psychologists, who divided the mind into distinct and separate parts.

[3] *The Experimental Psychology of the Thought Processes*, p. 60.

this makes no difference provided the distinction is useful.[4] To the third objection, that it is not useful I return a vigorous denial, and the remainder of this and the following divisions of this chapter are to be devoted to a defence of the necessity of the process-content distinction. In the meantime let me refer the reader in confirmation of my position to an article by Dr. E. Stanley Abbot,[5] in which the distinction is shown to be both real and important by the fact that either content or process may to some extent be altered independently of the other. For example, a gradual increase in the intensity of a thermal stimulus applied to a definite point on the skin gives successively three qualitatively distinct (i.e., distinct in *content*) sensations—(1) of "warmth," (2) of "heat," and (3) of "pain" —although the same psychical *process* is involved throughout.

18. *The Structural and Functional Points of View in Psychology.*—Corresponding to these aspects of experience there are two points of view either of which psychology may adopt in its general study of the mind—the *structural* and the *functional* points of view. This division of interest in the field of psychology corresponds again to a similar division of interest in the field of biology, represented by the customary division of the latter science into *morphology*—the study of the structure of organisms, "structural biology"—and *physiology*—the study of the activities of the organism and the functions of their various organs, "functional biology." Psychologists too may be interested primarily either in the structural, "content" side of their science, or in its functional, "process" side. Structural psychology treats the mind *statically*, as if it were a fixed thing like the body which it inhabits:[6] functional psychology treats the mind *dynamically*, as continuously active and never fixed, or as a stream of constantly changing processes.

[4] *V. inf.*, Chap. IV.

[5] "The Dynamic Value of Content," *Jour. Phil.*, etc., Vol. xiv, pp. 41 ff. (1917).

[6] I use this term figuratively, of course.

Now it must be admitted at once that the functional point of view in psychology is truer to the real inner nature of the mind than the structural point of view. The mind is certainly in no sense a fixed thing—there is no real "morphology of the mind," nothing in psychology to correspond literally to morphology as a biological science. And yet, *if* the distinction between process and content is a significant one, there must be a significance in the broader distinction between structural and functional psychology which is based upon that other one. And furthermore, as I shall proceed to demonstrate, both points of view are necessary to a thorough understanding of mental life, necessary if psychology is to be a *complete* science as in the Introduction we claimed it to be.

19. *Examples of Process and Content.*—The distinction between process and content will be clearer, and the necessity of both the structural and functional points of view for a complete psychology more obvious if we illustrate. Let us take, then, examples of different types of experience and examine them as far as possible from the two points of view.

(1) When we use the term *perception* we may be thinking either of the process of "perceiving," or the "percept" as a content of consciousness to be distinguished, for example, from an idea or an emotion. Perception may be defined functionally as the consciousness of particular material things at the time stimulating the sense-organs; or we may first define the percept, and then define perception as the process of forming percepts, this being the structural method of approach. From the latter point of view the percept is analyzable into two groups of elementary contents—sensations and memory-images;[7] functionally, perception may be thought of as including the two subordinate processes of sensation and apperception, though this is not strictly speaking an analysis.

(2) In the case of *sensation* there are not, unfortunately, two separate terms in common usage to mark the process-

[7] Or "primary" and "secondary sensations," according to Sidis (*v.* his *Foundations,* Chs. xix-xxiv) and others.

content distinction, and the word "sensation" itself covers both aspects. It is, however, highly advisable that this distinction should be preserved in the sensory field, and it is quite legitimate to use as many do, the verb "to sense" and the participial form "sensing" for the process side of sensation, and the term "sensum," "sense-datum," or "sensate" for the content side. Sensing includes seeing, hearing, smelling, etc., the corresponding sensates being lights and colors, noises and tones, odors, etc., respectively.

(3) In the so-called higher cognitive experiences, we distinguish in *memory* between the process of "remembering" and the "memory-image" as content; in *imagination,* between the "imagining" process and the "image of imagination" as content; in *thought,* between the "thinking" process and the "idea" or "concept" as content of thought.

(4) It is unnecessary to continue our distinctions in any detail into the fields of *affection* and *conation,* where terminology is still less developed than in the cognitive field. We speak of "feeling" as a process, and "*a* feeling" as content. and so of "emotion and "*the* emotions," etc.; but whereas we have the functional verb "to feel," we have no corresponding term in the case of emotion. There is no structural noun to correspond to the functional "will" or "willing," but we may use the far better term "volition" in either sense, retaining the participial "willing" but rejecting the noun, which latter we may be content to leave, along with the words "soul," "reason," "intellect," etc., to the philosopher.

The following table may make the above discussion clearer:

TABLE II.—EXPERIENCE AS PROCESS AND AS CONTENT

Types of Experience	*Perception*	*Sensation*	*Memory*
As Process	Perceiving	Sensing	Remembering
As Content	Percept	Sensate	Memory-image
Types of Experience	*Imagination*	*Thought*	*Feeling*
As Process	Imagining	Thinking	Feeling
As Content	Image of Imagination	Concept	Feeling

Types of Experience	*Emotion*	*Impulse*	*Volition*
As Process	Emotion	Impulse	Willing
As Content	Emotion	Impulse	Volition

2. *Structuralism and Functionalism as Schools of Psychology*

20. Insistence on either the structural or functional point of view to the exclusion or complete subordination of the other by different psychologists has led to the establishment of two opposing schools in contemporary psychology, known respectively as the structuralist and the functionalist schools. Beside these there are two other concepts of the science now in the field—the latest, Behaviorism, and an earlier view known as Self-Psychology. We shall proceed throughout the remainder of this chapter and the next to consider each of these existent theories of what psychology is, in the order named.[8]

21. *Structuralism* views the mind entirely from the standpoint of structure. Its typical definition would be, Psychology is the science of mental *states* or mental contents. Its method is to take some momentary psychosis or state of consciousness, analyze it into its elementary contents, and then show how these elements combine to form the more complex contents with which experience is ordinarily concerned.[9] The leading contemporary exponent of this school is Professor E. B. Titchener, other important recent and contemporary representatives being Wundt, Yerkes, and Münsterberg. Professor Titchener's definition of psychology as "science of mental processes" is, however, inconsistent with structuralism, the term "process" being characteristically functional rather than structural; but the use of this term is to a large extent justified on the ground that it makes explicit the fact that mental contents are not really "unchanging objects" but constantly changing.[10] The entire concept of mental content and the structural point

[8] *Cf.*, through the ensuing discussion, Table IV at the end of the next chapter.

[9] *Cf.*, for example, the analysis of percepts into sensations and after-images (19).

[10] Titchener, *Text-Book of Psychology*, pp. 15, 16.

of view in general are, of course, abstractions; but necessary abstractions, for without them one important aspect of mental life would fail to receive scientific treatment.

22. *Functionalism* views the mind entirely from the standpoint of function, its typical definition being, Psychology is the science of mental *processes* or functions. The concept of mental function is by no means clearly defined, or interpreted with any degree of unanimity by those who use it, but the underlying principle of the school seems to be that all mental processes should be thought of as different ways in which the entire psychophysical organism adjusts itself to the varying conditions of the environment according as they affect the life and well-being of the organism itself. "All our sensations," says President Angell, the leading champion of this doctrine, "all our emotions and all our acts of will" must be regarded merely "as so many expressions of organic adaptations to our environment."[11] Functionalists generally deny the value of the distinction between process and content, and so of any structural analysis of the mind: each process is to be described in its wholeness, not analyzed into its constituent parts. Sensation, for example, is to be described by relating how the psychophysical organism—i.e., the individual as a single mind-body affair, not merely as mind—acts in the process of sensing a physical stimulus, as distinguished from its *modus operandi* in the process of judging, willing, or desiring, etc. Sensation is not so much a complex of elements as it is a way of acting on the part of the entire individual. Functionalism thus treats mental processes rather as phases of a single mental activity, than as complexes of simpler elements, and in so doing, as has been admitted, is truer than structuralism to the real nature of mental life; but we still insist, and shall hope soon to demonstrate, that though a valuable and even essential method of treatment so far as it goes, it is nevertheless an incomplete method.

[11] *Psychology*, p. 7.

The concept of mental function as mode of reaction to environment has obvious biological relationships, if not a purely biological origin. Functionalists however, are insistent that their view by no means involves any admission that psychology is merely a branch of biology, as many of their critics have maintained. A psychophysical organism is more than a merely physical organism, and mind does make a difference to behavior: it is the task of the psychologist, then, to show how the reactions of the individual to his environment differ from what they would be were he merely body and not both body and mind.

The close relationship of functionalist psychology to biology, however, has led many of the more radical followers of this general viewpoint (as Pillsbury and W. McDougall[12]) to renounce all mental or subjective terms in their definition of the science and to prefer the simple statement that Psychology is the science of *behavior*. Pillsbury justifies this on the ground that all subjective definitions, as "science of mind" or "science of consciousness," are meaningless until the terms "mind" and "consciousness" are further defined, whereas the definition "science of behavior" is self-explaining and expresses better than any other what psychology really means to the ordinary man. Such a definition, Professor Pillsbury thinks, does not involve in the least any change in the treatment of the subject-matter of the science: "by adopting the definition we change our description of the science, not the science itself." This last statement is undoubtedly true so far as Professor Pillsbury's own textbooks are concerned, but it is extremely doubtful that his definition really describes the science as he himself expounds it, as his chapters are concerned throughout with the phenomena of consciousness—sensation, perception, memory, feeling, and all the rest—and not with "behavior" in any distinct sense at all. The only consistent followers of this definition are the "behaviorists"

[12] President Angell, in his recent *Introduction to Psychology* (1918), adopts the same position.

who have thrown over all psychology in the older sense of the term, functional as well as structural; and of them we shall soon speak more fully.

23. *Reconciliation of Structuralism and Functionalism.*—A reconciliation between these two schools of psychology is to be found in a recognition of the importance and even necessity of both the structural and functional points of view for a complete understanding of mental life.[13] The functional method would seem *prima facie* to have the advantage because of the admitted fact that it is undoubtedly a more natural and less artificial mode of treatment of mental problems, but a closer examination of its procedure and results will make it clear that a strict adherence to it to the exclusion of the structural method would leave psychology maimed, impotent, and completely at the mercy of physiology. If psychology is to be a complete and independent science, both methods must be used to complement each other.

My reasons for this assertion are as follows. So far as the so-called *cognitive* processes are concerned, they may all be described in either structural or functional terms—perceiving as a form of reaction on the part of the individual to present physical stimuli in the environment, or the percept as a combination of sensations and memory-images; memory as an attitude of the mind toward past experience, or as a combination of images; judgment as an interpretation of present experience in terms of the past, or as a combination of concepts, etc. A complete description even in this field, it is true, would call forth both points of view in combination, but the phenomena *may* be described from either standpoint alone in purely psychological terms, and without passing beyond the legitimate bounds of a distinct and purely mental science. But when we come to the *affective* and *conative* processes the situation is

[13] This requirement may, perhaps, best be met by dividing psychology into two branches—*Psychostatics* or structural psychology, and *Psychodynamics* or functional psychology (*v.* Thorndike, *Elements of Psychology*, Parts I and II).

quite different, for these cannot be described at all *as mental* processes except in structural terms. The physiological accompaniments of feeling and emotion[14] may be described and the effects produced by the will in the physical world, but affection and conation themselves in their psychological nature as mental processes cannot be described in any other way than by analyzing them into their elements.

3. *Behaviorism.*

24. The year 1913 marks the birth of the most radical of all psychological concepts, that of "Behaviorism." This doctrine is an extreme, and yet perfectly logical, development of the functionalist position, and is far more consistent in its working out than the intermediate "radical functionalism" (as we may call it) of Pillsbury and McDougall; for it not only accepts the definition of these two writers theoretically, but vigorously puts this definition into practice. The Behaviorist movement was initiated and the doctrine founded by Professor John B. Watson of the Johns Hopkins University in two articles in the *Psychological Review* and the *Journal of Philosophy,* later combined in the first chapter of the book *Behavior* (1914).[15] Others who have helped to elaborate the doc-

[14] For evidence that this is the case, *v.* Watson, *Psychological Rev.*, XXVI, pp. 165 ff. (1919).

[15] Professor Watson has recently (1919) published a book entitled *Psychology from the Standpoint of a Behaviorist,* in which he carries out his program with reference to human psychology. One is rather amused in reading this book by the strenuous efforts made and the circumlocutions employed by the author to avoid the use of terminology involving consciousness (*e.g.*, pp. 89, sentence beginning second line from bottom; 91, sentence beginning on last line). On one occasion, where the ordinary terms designative of the leading emotions seem involuntarily to slip out, the writer apologetically comments, "We use these terms which are current in psychology with a good deal of hesitation" (p. 199)! Thought is merely "speech habits," implicit or laryngeal behavior; one does not *introspect,* he "gives a verbal report"; one is never *conscious* of white light when his optic nerve is stimulated by a mixture of complementary color waves, he "reacts to it as to a . . . white light"; the mental arithmetic of our childhood becomes "subvocal arithmetic"; etc. The very

trine or have promulgated similar views are Professors E. L. Thorndike, E. P. Frost, B. H. Bode, E. S. Abbot, and E. B. Holt.

Behaviorism is characterized primarily by two fundamental principles, one as to the nature of the *subject-matter* of psychology, and one as to the nature of the *method* of that science. First, behaviorism insists, as does radical functionalism in theory, that the true subject-matter of psychology is not mind or consciousness but *behavior*—that consciousness cannot be studied scientifically, that the concept of consciousness is a metaphysical rather than a psychological concept, and that consequently all problems as to the mind or consciousness are for philosophy rather than psychology ("rational" rather than "empirical" psychology) to solve. Secondly, as to method. behaviorism, unlike radical functionalism in this point, rejects introspection as unscientific if not impossible, and makes *experiment* and *observation of behavior* the sole methods of psychological research. We must carefully consider each of these points in turn.

a. *Behavior* vs. *Consciousness*

25. *The Behavioristic Program.*—"Psychology as the behaviorist views it," says Professor Watson," is a purely objective experimental branch of natural science"[16]—*viz.*, of biology. "Its theoretical goal is the prediction and control of behavior." The older view of psychology as the science of mind or of consciousness he thinks has been totally barren of results in the past, and is absolutely futile and hopeless for the future. "Psychology has failed signally during the fifty odd years of its existence as an experimental discipline to make its place in the world as an undisputed natural science."[17] Psychologists of the older schools still differ radically among

adjective with which he qualifies his new science of "objective psychology" is question-begging, in that all science, psychological as well as material, is by its very nature objective.

[16] *Behavior*, p. 1.

[17] *Op. cit.*, p. 6.

themselves on some of the most fundamental problems of their science, and there is no hope, so long as present methods are adhered to, that any greater uniformity will be attained in respect to these matters in the future. The time has come, then, "when psychology must discard all references to consciousness"[18] and devote itself entirely to the purely objective study of behavior. The study of consciousness as a subjective phenomenon of the human individual may be a legitimate topic for the philosopher, but its problems are speculative and not open to scientific treatment. Thus the behaviorist does not necessarily deny mind or consciousness, or that conscious processes seem to be different from physiological processes, but only that consciousness can be studied scientifically.

Pillsbury's position is recognized by Watson, and I think rightly, as an illogical compromise between the structural and the biological points of view. "It is possible to write a psychology, to define it as Pillsbury does (as the 'science of behavior'), and never go back on the definition: never to use the terms consciousness, mental states, mind, content, will, imagery, and the like."[19] This is a thoroughgoing as distinguished from a half-hearted "behavioristic program," which its originator has now developed in actuality in his textbooks of animal[20] and human[21] psychology.

26. *Kinds of Behavior.*—I shall henceforth use the terms "mentalism" and "mentalists" for all schools of psychology and of psychologists that consider mind or consciousness the true subject-matter of the science, as opposed to the "behaviorists" who deny that principle. "Mentalism" is, I think, less open to objection than the term "subjectivism" which is commonly used in opposition to the "objectivism" of the behaviorists.

Now the mentalist—and the ordinary man who, in his

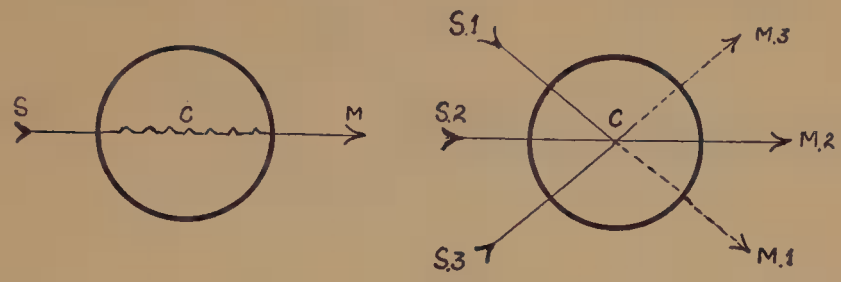
[18] *Op. cit.*, p. 7.
[19] *Op. cit.*, p. 9.
[20] *Op. cit.*
[21] *V.* our note 15 *sup.*

terminology at least, is certainly always a mentalist—thinks the most important distinction of types of behavior or of motor activity is that which subsists between unconscious or mechanical behavior on the one hand and consciously controlled or psychomotor activity on the other. To him, mechanical behavior is interesting only so far as it may develop later into, or may have degenerated from, psychomotor behavior; and psychomotor behavior itself is interesting only so far as it is the expression of consciousness. Outwardly—*i.e.,* from the point of view of the external observer—these two forms of behavior differ only in their relative complexity. When there is a single stimulus to action, or a group of stimuli all calling forth a similar reaction, the response itself is *immediate* and we have mechanical or "unconscious" behavior; but when there are a number of mutually interfering stimuli, each of which would if occurring alone lead to a different response from every other, there is a necessary interval of *delay* for the purpose of harmonizing the various possible responses, before any action can take place. In the latter instance we have "conscious" or psychomotor behavior—or behavior "after deliberation," in mentalistic terms: what the outside observer sees merely as a more or less unaccountable period of delay, the agent himself recognizes as a period of deliberation.

This distinction may be made clearer in the light of the following diagram. In the left-hand figure the arrow represents the immediate nerve process from stimulus (S) through the central portion of the nervous system (C) to motor reaction (M), the waved line through the circle C indicating the possible circuitousness of the cortical portion of the nerve process. In the right hand figure we have three mutually interfering stimuli (S_1, S_2, S_3) any of which if allowed to continue its course unhindered would produce an immediate response (M_1, M_2, M_3 respectively): in this, for simplicity's sake, I have assumed that S_1 and S_3 have both been thwarted, and S_2 alone allowed to continue itself through.

So much for the mentalist's interpretation, but what says

"Unconscious" Behavior *"Conscious" Behavior*



the behaviorist? That the period of delay can and must be interpreted in objective terms, not in terms of "conscious deliberation." The period of delay is merely one of adjustment and harmonization of the conflicting stimuli—not, as the mentalist tells us, *also* one of conscious deliberation. Both the described types of activity,—that in which the response is delayed as well as that in which it is immediate—belong under the head of what Watson calls *"explicit"* behavior; but in the former case there is also another kind of not yet described behavior involved, which he denominates *"implicit"* behavior.[22] Explicit behavior consists in the visible activities of the larger muscles of the body, those activities which are "plainly apparent to direct observation," and may be either of the immediate or the delayed type: implicit behavior, which is called into being only when the response is delayed, consists in certain imperceptible (to the outside observer, at least) internal muscular activities, "involving only the speech mechanisms"—especially, Watson thinks, the muscles of the larynx and the tongue. "Where explicit behavior is delayed (*i.e.*, when deliberation ensues), the intervening time between stimulus and response is given over to implicit behavior (to 'thought processes')." Up to the present time, it is true, experimentation and observation have reached only to the explicit type of behavior, but it is the firm conviction of Dr. Watson that in course of time implicit behavior also will yield to the same "objective" methods of investigation.

[22] *V., Behavior,* pp. 19 ff.

I attempt to indicate, in the subjoined table, Professor Watson's classification of types of behavior. The lines indicate that the mentalist's "unconscious" behavior is purely of the explicit type, but that the mentalist's "conscious" behavior includes implicit and explicit activities.

KINDS OF BEHAVIOR

Mentalist Classification		*Behaviorist Classification*	
Unconscious or Mechanical	———	Immediate	——— Explicit
Conscious or Psychomotor	———	Delayed	——— Implicit

27. Frost's Behaviorism.—Professor Eliott P. Frost, formerly of Yale University, has pronounced a behavioristic system of psychology, which, notwithstanding its unusually barbarous terminology, is worthy of a brief description. His system actually antedates Watson's in its origin by a few months,[23] and is unique in that he still uses the terms "conscious" and "awareness," though in a peculiar and purely physiological sense.

"Any simple single sensorimotor path" through the nervous system from sense-organ to muscle Frost designates an "alpha-arc": such an arc is always aroused into activity by a peripheral stimulus and issues in some motor act or form of behavior (Watson's "immediate response"). "Whenever an alpha-arc functions so as to include the specific cortical structures," additional nerve-cells are brought into activity, and "such a further arc, aroused by an alpha-arc rather than by a peripheral stimulus" (Watson's "delayed response") Frost calls a "beta-arc." "In brief, when a stimulus falls upon a sensitive neural mechanism, it will normally arouse an alpha-arc, and this alpha-arc *may* in turn arouse a beta-arc."

To the functioning of either an alpha- or beta-arc the term "awareness" is applied, though in a pure physiological sense as noted above. We may speak of an alpha-arc as being "aware of the external stimulus" which initiated it, and of a beta-arc as "aware of the alpha-arc" which initiated *it*; but

[23] *Psychological Review*, May 1912. Watson's, same *Review*, March 1913.

no arc can be aware of "itself," and in no case does "awareness" involve "consciousness."

Behavior is classified by Frost under the three categories of "preconsciousizing, consciousizing, and consciousized behavior." "Pre-consciousizing" behavior is the reflex, mechanical type; a "consciousizing process" is any nerve process which involves reference to some preceding nerve process rather than to some external stimulus; and "consciousized" behavior is that which has become mechanical as the result of a number of "consciousizing" processes. A beta-arc-process is always a "consciousizing" process: an alpha-arc process is either "pre-consciousizing" (*i.e.*, reflexes, alpha-arcs that have never become connected with beta-arcs) or "consciousized" (*i.e.*, habitual mechanisms, which originally involved beta-arcs also but no longer do).

What the mentalist would call the experiencing of the color red is interpreted by Frost as follows:—The response of the retina to the ether vibrations produced by so-called red involves an alpha-arc, and gives the organism what may be called "red-awareness." "If this arc now an instant later arouses a consciousizing process (beta-arc) we get what we may call the 'sensation red'"; but what the mentalist calls "consciousness" is sufficiently accounted for in Frost's behavioristic system as merely beta-arc-functioning after the manner just described.

The central problem of animal psychology, according to Frost, is not "are animals conscious? but, does their behavior indicate consciousizing"?; and the problems of human psychology become not, what kind of consciousness does such and such behavior express? but, is such behavior pre-consciousizing, consciousizing, or consciousized?

Except to note again the unfortunate complexity of this terminology, I shall say no more regarding the particular system of behaviorism formulated by Professor Frost, but pass at once to a general criticism of the behavioristic program.

28. *Criticism of the Behavioristic Program.*—The mental-

ist is usually quite willing to accept all that is really positive in the behaviorist's program, but insists that nevertheless in addition to the proposed science of behavior there is also room for a science devoted to the study of mind or consciousness. There are undoubtedly persons whose temperament and talents lead them naturally in the direction of the investigation of behavior as the most interesting field of inquiry, but there are as surely others "to whom mental process as mental process is the only fascinating and ultimately worthy subject of study" and who are therefore "not likely to rest content with any such program as that depicted" by Professor Watson and his followers. The mentalist "justly urges that to recognize and describe the *external expressions* of love, hate, and anger," for example, "is as different from the actual experience of these thrilling emotions and from the description of them as immediately felt, as is the inspection of a good meal from the consumption of the same." "Something corresponding to consciousness in its vague common meaning does exist," and if so there should be room for a science whose problems arise within the compass of such consciousness.[24] The behaviorist may be satisfied, let us say, to understand the nerve processes which underlie and condition various forms of outward behavior in animals and men: the psychologist, however, inevitably pushes his inquiry farther and asks, does the animal *know* that and why he is acting in such and such a way? does he *remember* having been in this particular place before? are human emotions *merely* organic sensations or something more? can *I* (not my nervous system with its "alpha" and "beta" arcs) be conscious of more than two or three objects at once? etc., etc.

The first objection which the mentalist opposes to the behaviorist's program, therefore, is that *the concept of behavior* —even that of "implicit behavior"—*is inadequate* to account for all that goes on between stimulus and reaction and to

[24] Angell, *Psychological Review*, Vol. XX, pp. 267-269 (1913).

satisfy the scientific curiosity of mankind. Reflection inevitably shows that consciousness is different from behavior, that mental processes are different and distinguishable from their physiological accompaniments and expressions and their effects in the physical world; and this being the case, there must inevitably be individuals in the world who will wish to devote their entire attention to the study of those mental processes.

In confirmation of the inadequacy of a purely materialistic program, Dr. Abbot has shown[25] the importance of mental *content* to behavior. Content, he tells us, "enters dynamically into the causal series of reactions that lead from sensation to behavior." Reaction to an optical stimulus, for example, differs according to the content of the sensation, as when one is annoyed by the glare of a superfluous light in one's eyes and proceeds to put it out. In such a course of behavior the content of the sensation (intense white light) determines the percept (that of an unnecessary and painfully glaring electric light shining into my eyes), the latter perceptual content determines the affection (a feeling of annoyance), the content of affection determines the impulse to put out the light, and the content of the impulse determines the action which fulfils it.

Even *biology,* as we are reminded by Professor C. J. Herrick,[26] is an incomplete science with consciousness left out. "Possibly the new psychology may learn to get along without consciousness," he tells us, "but biology cannot do so." "The analysis of the behavior of both lower animals and men speaks unequivocally in favor of regarding consciousness as a positive biological factor in animal evolution." So long as there are biologists who believe in the reality and dynamic importance of consciousness, surely psychologists need not despair of the value and distinctiveness of their science!

One other point. Functionalism and behaviorism in psychology are both, from one point of view, the natural develop-

[25] *Jour. of Phil.,* Vol. XIV, pp. 41 ff. (1917).
[26] *Jour. of Phil.,* Vol. XII, pp. 543 ff. (1915).

ment of what is known as the "motor theory of consciousness," the central principle of which is that all consciousness is conditioned by motor activity—that consciousness is dependent not only on the reception of some stimulus by a sense-organ and the conduction of the resultant nerve impulse on up to the brain, but on the further conduction of this impulse on to the muscle and its consequent response. A complete sensorimotor current through the nervous system is, according to this theory, essential to the appearance of consciousness, and if the motor channels are blocked there can be no consciousness. If this is so, it may well be that consciousness is merely a secondary by-product of nervous activity, and the distinctive study of *mental* phenomena quite superfluous and valueless. The theory is well criticised, however, by Professor H. C. McComas,[27] who shows that there is no convincing experimental evidence for such a view, and that even the milder and quite innocuous but almost universally accepted dogma that all conscious processes *express* themselves in motor activity is far from proven. "No one will deny that there is a deep-seated tendency for the incoming impressions to go out into motor expressions; but there is nothing more than *a tendency.*"

29. *Behaviorism and the Mind-Body Problem.*—I leave to the last the exposition and criticism of one of the most striking arguments in favor of behaviorism and in derogation of consciousness as a separate factor in the life of the individual which has yet appeared.[28] The author is the same Dr. Abbot whose defence of the *structural* side of consciousness has already twice been referred to (17, 28), and yet in this earlier published article of his we have what amounts to a modern adaptation of the materialism of a half-century ago.

Mind, according to Dr. Abbot, is but a term for brain-functioning: as the function of the lungs is respiration, and the function of the legs is ambulation, so the function of the

[27] *Psychological Review,* Vol. XXIII, pp. 397 ff. (1916).

[28] Abbot, *Psychological Review,* Vol. XXIII, pp. 117 ff. (1916).

brain is cogitation. The individual thinks with his brain just as he walks with his legs, or breathes with his lungs. "We do not think of opposing or contrasting respiration or running with lungs, legs, or body: neither should we" oppose or contrast mind with brain or body (dualism, 5). Nor, on the other hand, should we say that mind and brain are *identical,* two aspects of the same reality (monism, 6), any more than we would say that respiration is identical with the lungs or running with the legs. Mind in short "is related to body as function or activity is related to structure." According to this view, then, instead of two kinds of psychology, structural and functional, psychology is the functional side of neurology and neurology the structural side of psychology.

It would hardly be fair to call this materialism in the strict sense of that term, but its implications are certainly materialistic. In saying that thought is a function of the brain as respiration is a function of the lungs, Dr. Abbot is overlooking one important point. Respiration is a visible, audible, and even tangible activity, and the air respired a material substance: both, therefore, are common objects of experience to all conscious beings, "objective" facts, observable with the senses, and therefore physical. Thought, on the contrary, is a purely individual, private, "subjective" phenomenon, and so not physical at all. The true "function" of the brain as neurology studies the latter is not thought or consciousness or "mind," but the coördination and central control of nerve-impulses from and to different parts of the nervous system, and these are as "objective" in their nature as breathing, running, and all the rest. (*Cf.* sects. 75-77, *inf.*)

b. *Behaviorism and Introspection*

30. It is customary to say that psychology uses the same method for the discovery of its facts as other sciences—namely, *observation;* but that psychological observation because of the peculiar nature of metal facts is of two kinds, one distinctive of psychology—*introspection,* and the other an-

alogous to the method used in the objective sciences—*observation of behavior,* through which the underlying facts of consciousness are inferred. Furthermore, it is customary to add that observations in either form may be carried on under experimental conditions or non-experimentally, thus adding a third method, really preliminary to observation proper,—namely, *experimentation.* Of these three methods however, behaviorism rejects introspection as unscientific, and accepts only experiment and observation of behavior as the sole true psychological methods. Behaviorism's opposition to the mentalist view of psychology is really the result rather than the cause of its rejection of the introspective method: hence a critical study of that method, and an appreciation of its undoubted difficulties, is essential to a thorough refutation of the behavioristic doctrine.

31. *The Nature of Introspection.*—Introspection is most simply defined as the direct observation of one's own mental processes (Angell). It is *direct* observation (observation of the object of psychological interest directly) as opposed to the method of observation of behavior which is indirect as it is used by the psychologist. By this distinction I mean merely to emphasize the fact that when the biologist observes behavior he is interested in that behavior for its own sake, and the method is consequently *for* the biologist a method of direct observation; but when the psychologist observes behavior he is doing so for the purpose of inferring therefrom the underlying mental conditions in which alone he is interested, hence for him introspection is the direct method of observing consciousness and observation of behavior is an indirect method of observing (better, inferring) consciousness.

The modern concept of introspection is the scientific successor of the historic pre-scientific doctrine of "the inner sense." According to this theory, which we shall meet with again in another connection (72), just as there is an "outer sense," constituted of what we even today commonly call "the five senses," to make us aware of physical things, so there is

also an "inner sense" by which we come to know the things of the mind. In this view, the world of knowledge falls into two distinct spheres, and the mind is endowed with two distinct organs by which to become conscious of them.

That this doctrine of an inner sense added to the five outer senses is based upon a false though tempting analogy becomes evident, however, so soon as we inquire into the nature of such an interior faculty. To observe physical things we look at them, feel them, smell them, and in all possible ways bring them into contact with our bodily sense-organs—the objects are outside of me, and impress themselves upon me from without: in introspecting, on the contrary, the objects introspected are a part of myself—*I* think, *I* remember, *I* feel pleased, *I* will. There is in introspecting no intermediate organ between myself and the object of my knowledge, as in perceiving there is a sense-organ (the eye, the ear, etc.) between myself and the physical object. The only resemblance between sense-perception and introspection, between "outer" and "inner sense," is that they both give us direct knowledge of their respective objects; but they do so in such different ways as to make the term "sense" entirely inapplicable to introspection.

What, then, positively *is* introspection? It is a cognitive process of the form of thought or judgment—"reflection upon" experience. Cognition as a phase of consciousness includes, let us say, both presentative (sensation and perception, "outer sense") and ideational processes; ideational processes are memory, imagination, and thought; thought includes the three logical or logic-ward processes of conception, judgment, and reasoning; one of the highest products of conception is the concept of the self, and one of the highest forms of thinking that thinking about the self which we term self-consciousness. Without inquiring at this point into the nature of self-consciousness, we can at least recognize that without self-consciousness introspection is impossible: unless one has attained that step in intellectual development which we call

self-consciousness, it is impossible for him to introspect.

To introspect, then, is to reflect upon one's experience. To experience pain is to have impressed upon one's nervous system a stimulus of a specific nature: to introspect the sensation of pain is just to set that sensation in the foreground of consciousness, to recognize especially that it is a part of *my* experience, to make this sensation something more than a sensation or presentation—namely, an *object of judgment.* To remember is to bring into consciousness some object or event which no longer exists in my actual experience, but which is recognized as having been at some previous time an object or event in my actual experience: to introspect a memory is to examine and analyze the image aroused in my mind by the act of recollection, and so to make this image not merely something experienced but something *judged* to be of such and such a nature. What I remember, then, is the object or event itself, but what I introspect is the image *of* that object or event in my present consciousness: just as in perception what I perceive is the physical object itself present in my environment, but what I introspect is the experience produced in me by the presence of that object.

Finally, in the affective and conative spheres the distinction between having an experience and introspecting it is still more evident. Thus to "have an emotion" is to "feel" angry, excited, pleased, or what not, while to introspect that emotion is to *know,* to "judge," that I have an emotion, and to inquire into the constitution of the emotional experience; but to know that I have an emotion and to know what that involves is quite a different matter from merely experiencing emotion. In the same way to know that I am willing to perform a certain action and to know what that willing-process involves is a quite different matter from the actual process of willing that action. In all these cases we have on the one hand, experience —conative, affective or cognitive—and on the other hand, judgment about experience, which is as such always cognitive.

Modern psychology substitutes for the old doctrine of two

distinct organs of knowledge, one in the field of physical things and one in the field of psychology, the theory that the distinction between introspection and outward observation is one of point of view only. Introspection differs from external observation, says Pillsbury,[29] only in the attitude of mind which we take toward the object of observation. When we observe a physical object, as a light, "the question in mind, expressed or implied, is as to what the object may be in itself or in relation to other objects. When we introspect, on the contrary, we ask what the experience means to us and what its relation may be to other mental processes. Exactly the same experience may, and usually does, furnish the starting-point for both." Thus, in the case of the light, if we are inquiring what kind of a light it is, and what produces it, we are observing objectively; but if we are interested in its effect upon us, or in knowing why we were attracted by it, the process is one of introspection. In the same way, we may add, with introspection of ideational, affective, and conative processes: so long as we are interested in the idea as true or false, in the emotional experience as needing expression, or the situation which aroused the emotion as calling for an immediate response on the part of ourselves, or the willing as producing results in the outside world, introspection is lacking; but when we become interested in the idea, the emotion, or the will-act as a phase of individual experience and in its relations to other experiences antecedent or consequent, the process becomes by that very change of interest introspective.

32. *The Difficulties of Introspection.*—From the very nature of introspection as thus educed certain serious difficulties inevitably follow, and it is chiefly on account of the apparent insuperability of these difficulties that behaviorists have been led to throw over the introspective method altogether. A closer examination of them will, however, it is hoped, show them to be after all not absolutely fatal—to be difficulties, indeed, but by no means final obstacles to any use of introspec-

[29] *Journal of Philosophy,* I, pp. 225-228.

tion or to the acceptance of consciousness as the legitimate subject-matter of psychology.

(1) The chief objection offered to the method is that introspection being itself a mental process necessarily interferes with or alters the mental process which is being introspected. When I observe a physical phenomenon, as a biological or chemical process, that process goes on quite independently of myself—I do not interfere with it, I merely watch it: in such a case there are two distinct processes going on in the world—the biological or chemical process in the outer object, and the observation and perception process in my own mind. When I introspect a mental process, on the contrary, as a memory or an emotion, there are two processes going on in my own experience—the memory or the emotion itself, and the introspecting *of* that memory or emotion; and I cannot examine into such a process without by that very act interfering with, altering, or in some way modifying, that process.

Many psychologists have called attention to this difficulty;[30] and unquestionably experience confirms their statements. As soon as I begin to ask myself "what am I doing when I perceive, remember, think, feel, or act," those processes are no longer what they were before. If I introspect memory or imagination, it is no longer memory or imagination only, but memory-thought-about or imagination-thought-about. In the affective and conative spheres, again, the difficulty becomes especially obvious: as soon as I begin to introspect an emotion or a volition, the emotion or volition tends at once to disappear. For example, if I am suddenly placed in a situation arousing an emotion of extreme terror, I am not likely to have presence of mind enough to stop and ejaculate—"See here! I am a psychologist, and as such am interested not in the object of my terror but in the terror experience itself. Now what is really going on in my mind as I pass through

[30] *V.* Scripture, *The New Psychology,* Chap. I (especially pp. 8-10). Also almost any textbook of the "mentalist" schools.

this singular and thrilling experience?" If I do so, the emotion itself will begin to die out as I start to examine it. So, if I am planning to carry out into action an important resolution, and stop to examine before the action takes place what is going on in my mind in the process of determining upon that action, the action itself will be delayed and the determining-process come to an end.

Another aspect of this same difficulty is brought out in the statement of Comte[31] that in introspection "the mental energy, instead of being concentrated is divided, and divided in two divergent directions. The state of mind observed, and the act of mind observing, are mutually in an inverse ratio; each tends to annihilate the other." "The mind in watching its own workings," says Stout,[32] "must necessarily have its attention divided between two objects—on the one hand, the mental operation itself which is to be observed, and on the other, the object to which this mental operation is directed."

The result of this is that "if the introspective effort is sustained and strenuous, it is apt to destroy the very object which it is examining. For, by concentrating attention on the subjective process, we withdraw it from the object of that process, and so arrest the process itself."[33] "In order to observe, your intellect must pause from activity; yet it is this very activity that you want to observe. If you cannot effect the pause, you cannot observe; if you do effect it, there is nothing to observe."[34] As James, in his usual graphic way, writes: "the attempt at introspective analysis" is "like seizing a spinning top to catch its motion, or trying to turn up the gas quick enough to see how the darkness looks."[35]

The usual way of meeting this difficulty is to admit it and

[31] Quoted by Scripture, *loc. cit.* Comte's aspersions on introspective psychology in the first chapter of his *Positive Philosophy,* are singularly prophetic of recent behavioristic criticism.

[32] *Manual of Psychology,* pp. 44 f.

[33] Stout, *loc. cit.*

[34] Quoted from Comte, Scripture, *loc. cit.*

[35] *Principles of Psychology,* I, pp. 243 f.

fall back upon what is called the "primary memory." We observe mental processes, it is said, not at the instant they are going on, but immediately after, or just as the process is dying away. The usual description of our consciousness of time helps us here: the moments of consciousness do not succeed one another as beads on a chain, or as drops of water falling from a poorly closed faucet (though James, in his later works, plainly intimates that they do)—rather, the consciousness of passing time is a rhythmical succession of *overlapping* moments, every new moment arising in consciousness *while* the preceding one is fading away. Thus moment B, the moment of the introspection *process,* observes moment A, the *object* of the introspection, before the latter has completely gone.

It is often said that to adopt this explanation is to reject direct observation and substitute memory, or to identify introspection with retrospection, and so to subject our psychological knowledge to all the vagaries and defects of memory. "Unaided observation," says Scripture, "was crude enough; so-called 'reflection,' or introspection of memory, is still cruder." But the term "primary memory" which I have used in the above description is as much a misnomer as the term "after-image": an after-image is not really an image at all, but a sensation persisting after the original stimulus has been removed, and should be properly termed an after-sensation—so "primary memory" is not really memory at all, but of the same nature as the "after-image" or after-sensation itself. To accept this explanation is not to deny that introspection has defects and is not always reliable, but merely to insist that this unreliability is not the unreliability of memory (which is notorious), but the lesser unreliability to which all observation, in physical as well as mental science, is subject. Most of the processes of physical nature can be observed while they are at their best, though this is not always the case, whereas it is an essential characteristic of psychological observation that the data can be observed only when they are fading away.

Confirmation of this latter point is found in Pillsbury's de-

fence of introspection.[36] It is obviously impossible, he says, to maintain two opposite points of view at once—as, for example, that of introspection and that of external observation. "You can no more introspect at the same time you [in the physical sense] observe than you can look at an animal at one and the same instant as a chemist and a biologist, or at a man as friend and as physician." And this, he continues, "is all that can be meant when we say that it is impossible to introspect a process during its course,"—the attitude of perceiving, feeling, etc., and the attitude of observing those processes, cannot be maintained at one and the same time.

There is no harm, I think, in the common saying that introspection is always retrospection, provided we understand the term "retrospection" to include looking back upon what is *passing away* ("primary memory") as well as looking back upon what is *past* and has in the interval been forgotten (memory in the true sense). If introspection were always of the latter type, we should have good cause perhaps to despair of its absolute value for science if not of its partial validity;[37] whereas the fact that introspection is really retrospection in the first sense of the term gives us, on the contrary, excellent grounds for hope for the future of our science.

As to the general objection we have been considering, that introspection as itself a mental process necessarily *alters* the facts which it observes, Scripture[38] has shown that the results of external observation are open to the same charge. "Introspection *does* distort things and lead to erroneous conclusions,"

[36] *Principles of Psychology*, I, pp. 243 f.

[37] Stout has shown (*Manual of Psychology*, pp. 44 f), furthermore, that even if introspection is always by means of memory in the strict sense of the term, we need not despair absolutely; for "by calling up a process in memory immediately after it is over"—or even, I should add, after a longer interval —"we are often able to notice much that escaped us when it was actually going on. In like manner the astronomer can call up in memory the image of a star which has just passed across his vision, and can then notice details which had escaped him at the moment of its actual appearance."

[38] *The New Psychology*, pp. 10-12.

he admits, "but so does all observation. The objections to introspection apply just as completely to physical or botanical observations as to psychological ones." In introspection we emphasize the process introspected, and thus distort it in relation to everything else in the mind, but this is true also of external observation: "whatever we pay attention to becomes a more prominent object than the rest of our experience." "I observe the sparks from an electrical machine, or the flower in the field, and utterly overlook the machine itself, or the other plants in the field.—If I wish to carefully observe the construction of the machine, I must neglect the spark; if I wish to study the tree, I neglect the flower. Likewise if I observe a memory, I overlook an emotion," and so give a more or less defective and distorted account of the former. But "these difficulties are inevitable in any science, they are necessary consequences of the method of observation," not restricted to the internal or introspective form of that method.

(2) Two other objections to introspection remain to be briefly treated. The first of these, that introspection often leads to contradictory results, we need hardly but mention. Of course the same thing is true of external observation, unanimity among physical scientists being only somewhat more common than among psychologists. Titchener names some interesting examples, and shows that the prospects for resolving present differences among psychologists as to some of the facts of their science are sufficient to bid us hope.[39] "No scientific method is infallible," and though the difficulties peculiar to the introspective method are more serious than those which mark the method of external observation, they are not fatal to the use of introspection altogether.

(3) That which is superficially the most serious difficulty of all, however,—one which is chiefly responsible for the frequent contradictory results just referred to, and is essentially inherent in the very nature of introspection—has been stated most clearly by Watson and the behaviorists. It is the fact

[39] *American Journal of Psychology*, XXIII, pp. 436-439.

that introspection is essentially an *individual method,* and each psychologist can introspect only his own mental processes. Psychology, as it "is generally thought of," says Professor Watson, "has something esoteric in its methods. If you fail to reproduce my findings it is not due to some fault in your apparatus or the control of your stimuli, but it is due to the fact that your introspection is untrained. The attack is made upon the observer, and not upon the experimental setting."[40]

But the very statement of the difficulty contains within itself its own criticism. Professor Watson, being an experimentalist solely, assumes that the only fit "apparatus" for a psychologist is a laboratory apparatus; but it has already been emphasized (30) that experimentation, whether within or without a laboratory building, can never be anything more than a preliminary or assistant to observation, and that the true laboratory of the psychologist is his own mind. Introspection is the psychologist's "apparatus," as his mind is his laboratory: "if you fail to reproduce my findings, it" *is* "due to some fault in your apparatus" (namely, in your introspection—or, of course, as is quite as likely to be the case, in mine). So, as to the last sentence quoted, the observer's mind is the central object of experiment in psychology, and when an "attack is made upon the observer" it is made upon the central part of the experiment, whether or not the "setting" is also attacked.

As to the charge of esotericism, it rests upon a confusion between what is esoteric or secret and what is merely *individual.* The "esoteric" is that which is restricted to a select few, but introspection is a method open to all: the *materials* of introspection are individual, but the use of those materials is potentially universal. Of course, introspection *of* one individual mind *by* that same one individual would be quite useless—the findings of every individual introspector must be supplemented by *collaboration* with other introspectors. As Stout puts it, "introspection, to be effective for the advancement of science, must, like other modes of observation, be carried on by a

[40] *Behavior,* pp. 6 f.

number of experts in coöperation. Each must communicate to the rest his own results, for confirmation or rejection."[41]

Hence, in conclusion, we may state that whereas introspection is undoubtedly full of difficulties, the difficulties are not after all so much greater than those that characterize the outward type of observation, and are in no sense insuperable: they justify the supplementation of introspection by other methods (as indirect observation through observation of behavior), but not the rejection of the introspective method altogether as the behaviorists would insist.[42] Further and positive defence of introspection may well be left to another section.

33. *The Necessity and Limitations of Introspection.*—Notwithstanding its difficulties, introspection is the only method by which mental processes can be observed, and if we are to have a psychology of consciousness as distinguished from a "psychology" of behavior we must use that method, faulty as it is. The fact of its defectiveness adds to the difficulty of psychology, but does not make such a science impossible.

Then the fact that "radical functionalists," who insist with the behaviorists that the true subject-matter of psychology is behavior and not consciousness, nevertheless accept the introspective method; and that even biologists admit its usefulness; affords the half-sceptical and half-believing mentalist considerable cheer. Thus Pillsbury tells us that "to give over introspection altogether is to abandon the method that has given much if not most of the body of knowledge that we have

[41] *Behavior,* pp. 45 f.

[42] Says Professor Stratton (*Experimental Psychology and Culture,* p. 3, note): The "fugitive character of many of our mental states has often been pointed to in proof of the impossibility of introspection. The truth of course is, that only by means of introspection do we know that our mental processes are changeable and elusive. It is curious that when critics make such short work of self-observation as a psychological method, they do not see that most of the facts they bring forth as evidence of its fundamental inadequacy are obtained only by this very self-observation."

at present, and to insist that we use only a method that has so far been little tried," and which has in many cases "when tested proved relatively futile";[43] and Herrick assures us that "conscious processes are biological realities which cannot be ignored in a comprehensive scheme of things, and the biologist can see no reason why they should not be observed in the only way open to him—namely, by introspection."[44]

But to insist on the necessity of introspection is by no means to deny that the method has obvious *limitations*. (1) In the first place, it is purely a *descriptive* and in no sense an explanatory method. "Introspection can never give us a system of psychology. . . . Introspection is psychological observation; and observation is a way of getting facts, . . data, materials of science."[45] "The data of introspection are never themselves explanatory; they tell us nothing of mental causation, or of physiological dependence, or of genetic derivation. The ideal introspective report is an accurate description, made in the interests of psychology, of some conscious process. Causation, dependence, development are then matters of inference."[46]

Titchener thinks, however, that introspection is still further limited—namely, to the *structural* facts—and has no functional value. "We cannot observe an experiencing; we are not called upon, in psychology, to observe an experienced; what we observe is experience."[47] Though Titchener does not in so many words limit introspection to structure as opposed to function, and though his terminology is ambiguous,[48] the limitation is there. Pillsbury, on the contrary, limits introspection to *functional* facts. "The real subject-matter of psychology is the fact that we attain conclusions, that we perceive distance, that we are prepared to act, rather than the imagery, or the movements that accompany, precede, or suc-

[43] *Science*, XLI, p. 378 (1915).
[44] *Journal of Philosophy*, XII, p. 547 (1915).
[45] Titchener, *American Journal of Psychology*, XXIII, p. 447.
[46] *Op. cit.*, p. 486.
[47] *Op. cit.*, p. 498.
[48] He uses the term "content-process" in a purely structural sense.

ceed."[49] In this sentence, Pillsbury rules out at once structuralism ("imagery") on the one hand and behaviorism ("movements") on the other: what we discover through introspection, he thinks, is the facts that *we* perceive, attain conclusions, etc.,—and these are functional phenomena—not the structural products (percepts, conclusions, etc.) or motor expressions of these processes.

In reality, analysis of the introspective method as we have already attempted it gives no countenance to the theory that either structural or functional facts are the more difficult: if we avoid the errors and guard ourselves against the difficulties inherent in the nature of introspection as such, we will find mental structure and mental function—"experiencing," as well as "experience," images and percepts as well as reasoning and perceiving—equally open to observation. And, furthermore, if we accept the program of reconciliation between structuralism and functionalism already set forth (23), application of the introspective method to both the structural and functional sides of mind becomes not merely valid but imperative.

Introspection, then, is a purely descriptive method—a method of observation and discovery—but it is of universal applicability throughout the field of mental phenomena. There is a further limitation to the universality of introspection as a descriptive method, however: (2) introspection is unlimited in the scope of its applicability, within the field of description as distinguished from that of explanation, but within that field it is necessarily *incomplete,* in the sense that its findings must be supplemented—not merely the findings of the individual introspector by the collaboration of other introspections, but the findings of all introspectors by use of the two auxiliary methods of *observation of behavior* and *experiment.* Introspection is the central and distinctive psychological method, but can only meet with well-deserved ridicule and scorn if it claims for itself a monopoly or insists on its all-sufficiency, to the ex-

[49] *Science,* XLI, p. 378 (1915).

clusion of the other auxiliary methods. Between the exaltation of introspection and the contemptuous rejection of any assistance from the experimentalist and the biologist on the one hand, and the equally contemptuous rejection of introspection altogether on the other, there is a happy middle course which consists in admitting the central and unique place of introspection as *the* psychological method, and yet recognizing the auxiliary and supplementing value of external observation and experimentation.

"No one method is complete in itself," says Pillsbury,[50] and with his words we may conclude our lengthy study of introspection. Introspection must be supplemented by external observation and experiment if description is to be complete, and description itself must be supplemented by explanation if scientific curiosity is to be completely satisfied, and the method of explanation in science is inductive *inference.* "To observation, direct and indirect—we add induction as the necessary method of psychological science."[51] And in a complete science of psychology all four methods are used—introspection, observation of behavior, experimentation, and inference—"no matter to what school the investigator belongs."[52]

c. *Conclusions*

34. *Reconciliation of Behaviorism and Mentalism.*—In our criticisms of structuralism and functionalism we insisted that for a complete understanding of mental life a combination of both structural and functional points of view is essential: in the same way now, in criticism of the narrow behavioristic position, I should insist that if our understanding of human behavior is to be complete the "objective" and "subjective" points of view must be combined. To the behaviorist, as we have seen, behavior is a purely objective or physiological af-

[50] *Op. cit.*, p. 379.

[51] Ladd—*Psychology, Descriptive and Explanatory,* pp. 24 f. (Quoted by Titchener, *American Journal of Psychology,* p. 447.)

[52] Pillsbury, *loc. cit.*

fair; to the mentalist, consciousness is too often a self-sufficient object of interest in the human economy: a comprehensive view of human life, however, must find room for both consciousness *and* behavior—or, if you will, subjective and objective behavior. We criticise the behaviorist not merely for his scornful attitude toward the older psychology, but also for his narrow conception of behavior—for presuming to think that human life or behavior can be explained in purely objective or physiological terms. Mentalistic psychology does not, or at least should not, claim to be an all-sufficient science of human behavior, but only a science of that part of human nature which we call psychical; but behaviorism does make such a claim, and therein lies its error.

In support of my general contention, I again quote Professor Herrick. "It is a legitimate scientific procedure," he says, "to isolate for experimental purposes any phenomena from their setting, providing that in the end the corresponding synthesis is affected." So, "while it is possible and legitimate to neglect consciousness in any particular programme of the study of behavior, it is both inexpedient and unscientific to eliminate the introspective method from the behavioristic programme as a whole. On the other hand, it is equally mischievous to assume that because certain useful generalizations can be drawn from a purely introspective study of consciousness, therefore behavior can be neglected in the psychologist's programme as a whole." If psychology is to maintain its place among the sciences, it must not isolate itself from the rest of natural process by limiting its interest to pure introspection or to purely objective behavior."[53]

[53] Herrick, *Journal of Philosophy*, XII, pp. 549-551. While indorsing these words in their main contention, I do believe, as it is one of the main objects of this work to demonstrate, that it is perfectly possible to have an "independent psychology" which ignores physiology and objective behavior, just as it is perfectly possible to have a physiology or a biology which ignores consciousness. Dr. Herrick's main point, I take it, is that either of these sciences is incomplete as a study of man as a whole, and in this I am heartily in agreement with him.

It makes no essential difference whether we consider consciousness a form of behavior—"subjective," as distinguished from "objective" or physiological, behavior; or whether, as seems to me generally better from the point of view of clearness of language, we restrict the term behavior to the objective type as the expression of consciousness. Neither does it make any essential difference whether we restrict psychology entirely to the field of consciousness, and create a new science for the study of objective behavior, and a new one again for the study of human behavior in its unity as *both* mental and physiological; or whether we use the term psychology to cover the entire field. Professor Herrick would seem to favor the latter usage—behavior must not be neglected in the psychologist's programme, psychology must not limit its interest either to pure consciousness or to objective behavior. Professor Harvey Carr[54] also urges this extension of the term, proposing "the somewhat unorthodox view that the mental functions with which psychology concerns itself are in reality psychophysical,—and that psychology should study and attempt to comprehend these functions in their entirety," thus including "within its domain activities which lie outside the field of consciousness." Such a view, he thinks, "offers a mediating point of contact for the two extremes of subjectivism and behaviorism."

To the present writer, on the contrary, it would seem far better to follow the other terminology proposed above—namely, to make "psychology" mean what it says it does, "the science of mind," but to admit the need of a science of objective behavior and also of a science of "behavior" in the broadest sense of that term (subjective *and* objective). The two sides of man's nature may be distinguished for the purpose of specialization, yielding the distinct special sciences of consciousness (psychology) and of behavior; but they must be united again for the purpose of comprehensiveness, and a science which will consider them in their mutual relations is

[54] *Psychological Review*, XXIV, 181 ff (1917).

imperatively called for.[55] A consideration of the problem of the relations of these various sciences having to do with human behavior to one another and to the biological sciences in general will be undertaken at this point.

35. *Behaviorism and the Biological Sciences.*—Most critics of the behaviorist program will be willing, I think, to accept the statement that to deny behaviorism in psychology is not to deny that there is a perfectly valid place in the world for a new "science of behavior," but only to deny that such a science may probably be called psychology. To designate the proposed new science, the term "praxiology" has been suggested by Mercier and by Dunlap; and if we are interested in connecting the science of human behavior with the study of the behavior of the lower organisms, the term "tropology" might well be considered. In delimiting the field of psychology from that of physiology, McDougall asserts that "physiology investigates the processes of the parts or organs of which any organism is composed, while psychology investigates the activities of the organism as a whole—that is, those in which it operates as a whole or unit";[56] and substituting the term "praxiology," or any other agreed upon, for "psychology," we may indorse this statement in our delimitation of the new science of behavior. But wherein lies the distinction between praxiology thus defined and the older science of biology? In answering this question we shall find it useful to distinguish "biology" proper from the "biological sciences" in general, first inquiring as to what the former term covers, and then into the relations between it and the other sciences of the general group.

Biology, the science of life or of living things, is commonly divided in two ways: first into *morphology,* the science of the forms or structure of living things, and *physiology,* the science of the activities of living things and the functions of their

[55] *Cf.,* A. H. Jones, *Journal of Philosophy,* XII, 462 ff. (1915), especially p. 471.

[56] *Psychology the Science of Behavior,* p. 35.

various parts; secondly, into *botany,* the science of plant life, and *zoölogy,* the science of animal life. A fifth division, *biogeny* or genetics, has to do with the problems of the origin of life and the development of living things, and includes the two subdivisions—*phylogeny,* the science of the origin and development of species, and *ontogeny,* the science of the origin and development of individual organisms.

In addition to these there are three other well-organized and highly important sciences whose relation to and interconnection with biology are so close as to make some general grouping inclusive of them all a desideratum—namely, anthropology, psychology, and sociology. *Anthropology* is undoubtedly a biological science, in that it has to do with that most highly developed of all "living things," man; and yet it is an extension rather than a division of biology. *Psychology* also is a biological science, for it has to do with mental life; and all that the mentalist insists upon in opposition to the behaviorist is that mental life is distinct from physical life, and therefore that psychology cannot fairly be regarded as a branch of biology in the strict sense of the latter term. *Sociology,* finally, is the science of social life, and so in the broadest sense a biological science, though not a branch of biology proper. Furthermore, whereas psychology, as we have been contending, is a purely mental science; man being at the same time both mind and body, and society having at the same time mental and physical factors, anthropology and sociology have affiliations at once with psychology on the one hand and biology on the other.

And now, what is to be done with *praxiology,* our new science of behavior? Physiology was defined incidentally above as "the science of the activities of living things and the functions of their various parts," but an examination of the definition easily discloses its dual nature, although it is only recently, as a result of the agitation of the behaviorists, that this fact has been widely recognized. The definition, that is to say, includes two distinct subjects of investigation—(1) the

functions and activities of the various organs of an organism in their relation to one another, the subject-matter of physiology proper; and (2) the activities of the organism as a whole in its relation to its environment, the subject-matter of praxiology. This distinction is on the lines of that of Professor McDougall recorded above, and our only quarrel with him is with regard to his confusion of praxiology with psychology. Praxiology, then, is to be thought of as a third division of biology, according to the first principle of division of that science as cited above, and as such coördinate with morphology and physiology.

But we are not yet quite through with our list of biological sciences. It was said above (34) that though the two sides of man's nature, mental and physical, may be studied separately, as by psychology and praxiology respectively, nevertheless "a science which will consider them in their mutual relations is imperatively called for." Such a science has already been established and a journal devoted to its progress started, by Dunlap and others under the name of *"Psychobiology."*[57] Psychobiology, therefore, is devoted to a comprehensive study of behavior in all its aspects, and covers the grounds to which the sciences of psychology and biology (especially in its divisions of praxiology) separately devote themselves.

Just one more word and I am through with this part of our subject. There may be some who will demur at our sharp separation of psychology as a purely mental science and praxiology as a purely physical one, and will insist that any genuine study of behavior must include all its factors. But let any such consider the situation in other fields. The interrelation between mental and physical factors in behavior can hardly be closer than that between the chemical and the physiological processes involved in digestion, for example, and is certainly not less intimate than the relation which subsists throughout

[57] Now consolidated with another review under the name, *Journal of Comparative Psychology.*

the organic world between the structure and the activities of organisms; and yet chemistry, and even morphology, are admitted as sciences having an independent field from that of physiology. The distinction between structural and functional psychology is analogous to that between morphological and physiological biology, and the distinction between psychology and praxiology is analogous to that between physiology—or, still better, physics—and chemistry. Just as we have distinct sciences of physics and chemistry, and a compound science of physical chemistry to investigate the ground common to both; and separate sciences of psychology and physiology, with their fields combined in physiological psychology; so we may fitly have separate and independent sciences of psychology and praxiology, and a compound science of psychobiology to study the complex behavior of the psychophysiological organism in all its phases. In all these cases, the distinctions are for the purpose of specialization and the combinations for this purpose of comprehensiveness, according to the principle asserted at the close of the preceding section (34). Behaviorists would admit praxiology only to the ranks of the sciences, and reject psychology, thus leaving no room for psychobiology; Professor Carr (34) would identify psychology with psychobiology, thus denying to psychologists the right to specialize in the purely mental aspect of human behavior; the view we have been defending would give equal right to all phases of the general problem.

In the appended table I have endeavored to summarize the above contentions as to the biological sciences and their relationships (*v.* p. 62).

36. *Behaviorism and Psychology.*—Now, in bringing to a close at last this lengthy, and I fear tedious, exposition and criticism of behaviorism, what final estimate are we to give as to its place in the world of scientific theory and its probable influence on the psychology of the future? Three things, I think:—

(1) In the first place, as was said in the beginning of the

TABLE III

The Biological Sciences

Psychobiology							
		Biogeny		Morphology	Physiology	Praxiology	Psychology
Biology	Botany	Phylogeny	Ontogeny	Plant Morphology	Plant Physiology	Plant Praxiology	?
	Zoölogy			Animal Morphology	Animal Physiology	Animal Praxiology	Animal Psychology
Anthropology		Human Genetics		Human Morphology	Human Physiology	Human Praxiology	Human Psychology
Sociology		Social Genetics		Social Statics	Social Dynamics		Social Psychology

N.B.—The double line delimits the field of the proper science of biology, and the triple line that of the science of psychobiology. Anthropology and sociology find their place as extensions of psychobiology, with similar divisions. So far as man is considered merely as a species of animal, biology and psychobiology include him within their field; so far as man is considered as distinct from the animals, just so far are anthropology and sociology distinct sciences.

previous section, however high an estimate we may place upon *the new science of behavior,* in any case it *is not psychology.* Scientific psychology as the mentalist views it *may* be impossible; but if so we shall have to give it up altogether—"praxiology" is neither identical with it, nor yet an adequate substitute for it.

It would be impossible to improve upon what Mr. Henry Rutgers Marshall has said upon this point,[58] and I therefore quote from him at length without apology. "I am ready," he says, "to agree most heartily that such men as Professor Thorndike and Professor Watson are engaged in founding a new science of behavior which not only promises important results, but which is already giving us points of view which are most significant—I can readily see, also, that men of a certain temperament who have begun as, and who still call themselves, psychologists may become dissatisfied with the slow advance made in this field, and may feel it best to abandon it, and to undertake the investigation of behavior in which their special talents will yield more immediate effective result. But it seems to me that the identification of this study of behavior with psychology involves an astounding confusion of thought.

"The study of behavior is a thoroughly objective science; just as thoroughly objective as the studies of anatomy or physiology. That there are . . . existences of the mental order type . . . can, however, not be questioned; nor can it be questioned that it is quite natural, and presumably legitimate, to group these existences together in what we thus call the mental order. And this is what has been for a long time described as the study of psychology.

"Now it is open to anyone to hold that this study is futile and unimportant. That is a matter of opinion; which we cannot feel to be well-grounded, however, when we consider the long array of masterful thinkers who have not considered the study of psychology, as thus defined, to be either futile or

[58] *Journal of Philosophy,* X, p. 715 (1913).

unimportant. But to hold that the science of behavior is really what psychology ought to aim to develop seems to me to be a thoroughly unwarranted view, and one which must lead to serious loss to both psychology and the new, and very evidently valuable study of behavior."

(2) My second and third points may be more briefly stated. And the former of these is that *the behaviorist movement has a positive significance for psychology.* As a refutation of the older concepts it is, I should insist, a failure—it has not succeeded and will not succeed in destroying psychology, but it has succeeded in putting psychologists on the defensive. It has above all the value of a *challenge* to psychologists of the older schools to arouse themselves to stronger efforts in defense of their position. It has thus performed a real service—not only for biology, in showing that there is a need in the world for a new special science of behavior—but also for psychology, in forcing it to defend itself against the charge that it cannot be a true science so long as it takes mind rather than behavior for its field of investigation. Too long have psychologists taken for granted that the subjective phenomena of mental life could be studied scientifically as properly as the objective phenomena of behavior, but no longer may they assume this without apology; behaviorist criticism has shown that this claim is at least open to question, and has left to the mentalist the task of reviewing his forces and defending his position. And such a challenge and attack is sure to be of positive benefit to psychology.

(3) After all, the underlying motive of the behaviorist movement is not so much a logical criticism of the foundations of the mentalist psychology as it is *despair* of its fruitfulness. Professor Watson warns us "that two hundred years from now, unless the introspection method is discarded, psychology will still be divided on the question as to whether auditory sensations have a quality of 'extension,' whether intensity is an attribute which can be applied to color, whether there is a difference in 'texture' between image and sensation; and upon

hundreds of others of like character."[59] Possible, we reply; but still we hope that long before that time many, if not all, of these problems will have found their solution. And this is our final point: we cannot rest our defense of mentalism on *a priori* grounds alone. Psychology is a new science, and the problems referred to above are among its newest problems, and yet the advance made through the despised introspective method in the last fifty years is in itself impressive and an earnest of hope for the future. We can, then, but go on unwaveringly, making the most of our imperfect methods because we know that we can make no progress whatever without them, and having done this in a *spirit of hope instead of despair,* accept the issue.

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[59] *Behavior,* p. 8

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Radical School

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CHAPTER III

Current Concepts of Psychology, Continued

1. *Self-Psychology*

a. Statement and Defence of the Principle

37. At the opposite extreme from behaviorism are to be found those psychologists whose typical definition is that Psychology is the science of the self. This is the most conservative school, since it represents the least possible divergence from the older and purely philosophical conception of psychology. The theologico-philosophical term "soul" is discarded, and the term "mind," together with all others which specifically limit psychology to the field of "mental processes" or "states," are regarded as inadequate. The doughtiest champion of this view is Professor Mary Whiton Calkins of Wellesley College, and I shall draw my summary of its principles entirely from her writings; but a similar general position has been defended also by many other psychologists—as Franz Brentano, G. F. Stout, J. M. Baldwin, Josiah Royce, James Ward, J. E. Creighton, and C. H. Judd. In fact, until the time of the differentiation of the various contemporary schools toward the close of the last century all psychologists were self-psychologists, and it is only in recent years that their position has been questioned at all.

Over against the view "that the basal fact of psychology is the psychic event"—the mental process or content—and "that a self is a mere series or system of such psychic events," Miss Calkins insists that the basal fact of psychology is the conscious self, meaning by self "what the plain man means by self, insofar as this does not involve the view that body constitutes part of a self."[1] All experience, she observes, is the

[1] *Psychological Review*, XIII, pp. 63 f. (1906).

experience of some self, and is meaningless apart from that self—or, as William James puts it, "every 'state' or 'thought' is part of a personal consciousness":[2] any attempt, therefore, to study experiences in abstraction from the self to which they properly belong is certain to result in a false or distorted psychology.

Miss Calkins defends her position first *negatively,* by demonstrating the inadequacy of the structuralist and functionalist concepts, and then on *positive* grounds; and we shall in what follows observe the same order.

38. *Inadequacy of Structuralism and Functionalism.*—Miss Calkins denominates structuralism "idea psychology," and criticises it on the ground that "it arbitrarily neglects a part of our immediate consciousness," and "offers an inadequate description of consciousness."[3] "I cannot be conscious of an idea [i.e., of any mental content] except as idea of a self. . . . If, therefore, I define psychology as science of ideas, I raise the inevitable question, 'whose idea?' and then refuse arbitrarily to answer the question." "The 'idea' is immediately experienced as idea of a self, or subject, mind, ego—call it as one will. To refuse to deal with this self is indeed theoretically possible, but it is a needlessly abstract, an artificial, an incomplete procedure."[4] Hence the program of structuralism is inadequate and must be rejected.

So, too, with functionalism. "This doctrine is not so clearly cut nor so precisely formulated as that of idea-psychology, for the word 'function' is used with different shades of meaning by different writers of this group"; but "common to all 'functional' theories is the conception of function as activity." I cannot, however, "study mental functions without at the same time studying the functioning self. For just as the study of ideas raises the unavoidable question, 'whose idea?' so the consideration of mental functions involves the question, 'func-

[2] *Psychology, Briefer Course,* p. 152.
[3] *First Book in Psychology,* pp. 273 f.
[4] *Journal of Philosophy,* etc., IV, p. 678.

tions of whom?' To define psychology as science of mental functions without referring the functions to the functioning self, is therefore, an entirely artificial proceeding."[5]

39. *Positive Considerations.*—Miss Calkins rests her positive defense of her doctrine of psychology on the testimony of introspection to the universality of self-consciousness.[6] "I cannot be conscious of an idea except as idea of a self; implicitly, if not explicitly, I am always conscious of a self, as having the idea or experience."[7] "There is no consciousness which is not self-consciousness." The self-consciousness of the baby, the sleepy adult, or the animal, to be sure, is a vague and unreflective self-consciousness; "but anything less than self-consciousness would not be consciousness at all: to be conscious is to be conscious of a conscious self."[8] Even the trained psychologists who deny consciousness of the self implicitly assert it, and "constantly describe and define consciousness in terms of the self or I."[9]

If all this is true, then, of course for psychologists to ignore the self is to leave their science incomplete and weakened at a vital point.

40. *The Nature of the Psychologist's Self.*—But what does the psychologist mean by "the self as basal fact in psychology?" Two answers have been offered to this question. "The first identifies the self . . . with the psychophysical organism . . . in a word, it conceives the self as mind-in-body or mind-plus-body: according to this view, body constitutes part of self. The second theory conceives of self as not inclusive of body: according to this view, body is *not* part of self, though it may well be regarded as closely related to self. On the basis of these

[5] *First Book,* pp. 274 f.

[6] *Op. cit.,* pp. 278 f.

[7] *Op. cit.,* p. 274.

[8] *Psychological Review,* XIII, pp. 67 f.

[9] *First Book,* p. 278. This claim that introspection inevitably bears witness to the universality of self-consciousness Miss Calkins defends at length against the weight of psychologists who deny it, in *The American Journal of Psychology,* XXVI, pp. 505-524.

two theories of the psychologist's self, there are three distinguishable forms of self-psychology. (1) In the first place, the self may be conceived as psychophysical organism, and psychology may be regarded as science of the processes or functions of the conscious body, the mind-and-body complex... (2) A second logically possible form of self-psychology would regard the self...as mind-without-body, self unrelated to body. ...(3) The third view...of the psychologist's self regards the self as distinct from body, but related to it."[10]

The first of these views of the self seems to be involved, Miss Calkins thinks, in "the practical procedure of most of our present-day functional psychologsts"; and it is certainly involved in the procedure of those whom we studied in the division of this chapter devoted to behaviorism, who refuse to separate even for purposes of specialization a mentalist psychology from a purely physiological praxiology, and insist upon always combining the two aspects of behavior in every study of the latter. Mind-plus-body may constitute the human *individual,* but the term *self* can have meaning only with reference to the mind-factor. The study of mind-plus-body is, of course, *psychobiology* (34-36).

But to insist that "self is non-inclusive of body" is by no means to accept Miss Calkin's "second form of self-psychology" and to regard the self as pure mind unrelated to any body. Professor Calkins rightly repudiates that doctrine, which she quite properly insists no one really defends anyway, and accepts as her own view the third—that psychology "regards self as distinct from body, but related to it." Psychology, in other words, has to do purely and solely with the mind, and this is true whether or not we accept the teaching of the "self-psychologists" *in toto;* but common sense recognizes that mind as we know it is inevitably, in some way or other, bound up with body.

41. *Self-Psychology as Reconciliation of Structuralism and Functionalism.*—In an earlier section (23) I insisted on the

[10] *Journal of Philosophy,* etc., V, pp. 13 f.

importance of both the structural and functional points of view, and the necessity of combining them in any complete study of mental life. Miss Calkins, in her Presidential address before the American Psychological Association in 1905,[11] made these same points, and offered self-psychology as the reconciling concept between structuralism and functionalism. "Self-psychology," we read, "the doctrine that the conscious self is the basal fact of psychology, harmonizes the essential doctrines of a structural and of a functional psychology"; and this because "consciousness, which always implies a conscious self, is a complex alike of structural elements, and of relations of self to environment."[12]

First, as to *functionalism.* "The cardinal conception of a functional psychology, that of consciousness as involving internal relations to environment, is," says Miss Calkins, "an integral factor of self-psychology."[13] "If the term 'function' be taken with the meaning 'reaction to environment,' and if the environment be then described, in Professor Angell's words, as 'social' and not merely 'physical,' it must follow that a 'function' is a social relation—in other words, a personal attitude."[14] "From all this it follows that functional psychology, rightly conceived, is a form of self-psychology, that its basal phenomenon is the psychologist's self, and that its significant contributions to psychology are, first, its doctrine of the inherent relatedness of self to environment, and second, its insistence on the progressive efficiency or utility of these relations."[15] In briefer terms: functional psychology defines consciousness in terms of reaction to environment; this environment is not merely physical but social; hence the relation between individual and environment is a social or personal relation, a relation of "selves" to one another, and

[11] *Psychological Review,* XIII, pp. 61-81.
[12] *Op. cit.,* p. 76.
[13] *Op. cit.,* p. 73.
[14] *First Book,* p. 275.
[15] *Psych. Rev.* article, p. 75.

"functional psychology" becomes a form of "self-psychology" without recognizing itself as such.

Self-psychology, then, according to Miss Calkins, is functional psychology come to a realization of its own significance: functional psychology carried out to its logical conclusion *is* self-psychology. The relation between her own doctrine and *structuralism* is, however, conceived by Miss Calkins after a different fashion: the structural treatment of mental phenomena apart from the self is an abstract and artificial procedure, but is recognized as a legitimate procedure if supplemented by and subordinated to the broader treatment of those phenomena as expressions of the self. In her first textbook, *An Introduction to Psychology* (1901), Professor Calkins treated psychology as *both* "science of selves" *and* "science of ideas" (contents): in her later work, *A First Book in Psychology* (first edition, 1909), she "abandoned this double treatment, with the intent to simplify exposition, not," she says, "because I doubt the validity of psychology as study of ideas, but because I question the significance and the adequacy, and deprecate the abstractions, of the science thus conceived."[16]

"Every conscious expression," Miss Calkins avers, "may be studied from either point of view"[17]—that of structural analysis, or that of self-reference—though the former is incomplete and artificial and the latter only the natural method of treatment. In her *"Introduction"* she distinguishes "two great classes of facts—Selves and Facts-for-the-selves," the latter being divisible again into "inner" or mental and "outer" or physical facts; and psychology is distinguished from the physical sciences, whose concern is with the last named "outer" facts, as having for its aim "the study of selves and of the inner facts-for-selves."[18] "Atomistic" (structural) psychology studies the "inner facts-for-selves" (contents of con-

[16] *First Book,* Preface, p. vii.
[17] *Psych. Rev.,* VII, p. 378.
[18] *Op. cit.,* p. 6. *Cf.* also, *Philosophical Rev.,* IX, pp. 493 f., 497-501.

sciousness) in their isolation: self-psychology studies them as referred to the self "for" which they are.

For example, perception may be described structurally as a complex of sensational elements, but in its fuller treatment is to be viewed as involving a consciousness of a real or possible sharing of my experience with a number of other selves. Imagination, which has a similar structure, is distinguished by self-psychology from perception as involving a consciousness of being experienced by myself alone. An emotion is described structurally as a complex of sensational and effective elements, but more completely as a passive relation of the self to other selves or to other impersonal objects. Will has a similar structural composition to emotion, but is characterized by an active rather than a passive attitude of the self to the outside world. All mental processes are described in the *Introduction to Psychology* in this twofold way.

We may, I think, acknowledge the incompleteness of the structural method of description, as we have indeed already done (23), and yet insist that the functional treatment is a sufficient supplement to the other: in so doing we deny the compulsive force of the arguments for the explicit reference of all mental processes to the self. Criticism, however, we reserve for the next section, noting at this point in closing our exposition, merely the difference between Miss Calkins's "reconciliation of structuralism and functionalism" and our own. In our treatment we accepted both structural and functional methods for what they are worth, and insisted only that they must be combined in any complete psychology: Miss Calkins, on the other hand, though accepting structuralism as a valuable but incomplete method, denies the value of the functional point of view altogether, except so far as it may be regarded as implicitly identical with the point of view of self-psychology.

b. Criticism of Self-Psychology

42. *The Metaphysical Nature of Self-Psychology.*—The leading objection to self-psychology is that it is a metaphysi-

cal rather than a scientific psychology. To study mental processes in themselves, analyzing them, classifying them, and formulating the laws of their connection as the structuralist does, or describing them as varieties of reaction to environment as the functionalist does, is undoubtedly a scientific procedure; but to explain them as expressions of a permanent, underlying self is decidedly a philosophical procedure, without scientific value or justification.

To assert this does not imply a denial that there is a scientific concept of the self with which psychology has a real concern, but merely that the concept of the self which Miss Calkins employs in her arguments *is* the metaphysical rather than the scientific "self." Her "self" is described as "relatively persistent," "complex," "unique," "related to objects";[19] the "I" which knows, rather than, in James's terminology, the "me" that *is known* and can be studied scientifically. It is a self to which all experiences must be referred, "whose" are the ideas of the structuralist and the functions of the functionalist.[20] But the "self" of scientific psychology is merely a convenient term for the sum-total or interrelated system of all the experiences of any given individual from birth to death; just as the term "nature" as used in the physical sciences stands for the sum-total or interrelated system of all physical phenomena, not for any "permanent" and "unique" reality underlying those phenomena. To go beyond this, and to speak of the Self or Nature as anything more than a sum-total of phenomena, is to leave the bounds of science and enter the realm of metaphysics.

"The great objection to introducing the self as a means of psychological explanation," says Professor Stratton,[21] is that the ego is not a particular mental process among other processes; it is not an event in experience, out of which other events may flow. The older attempts to employ it in scientific

[19] *First Book*, p. 3; and elsewhere in her writings.
[20] *Op. cit.*, pp. 274, 275. *Cf.* sup., (38).
[21] *Experimental Psychology and its Bearing upon Culture*, pp. 300 f.

explanation were very much like accounting for the climate of California by saying that nature causes it. . . . But nature is a collective system of occurrences, and to use it as a principle of explanation would be equivalent to saying that 'the All' does some particular thing." "So it is in psychology. . . . The soul is not a particular mental phenomenon among other phenomena. It is, rather, the personal system within which any particular mental events occur. It bears the same relation to the particular mental facts of my mind that nature does to the events of the physical world."

That the problem of the self-psychologist is metaphysical is also involved in the statement of Miss Calkins, adapting to herself one of Münsterberg's doctrines, that the "primary interest" of self-psychology is "to understand—not to analyze into elements."[22] But the problem of understanding, or interpreting the meanings of, mental processes is, as we shall later demonstrate at length,[23] characteristically *the* metaphysical problem concerning the self. "The problem of a science is to describe accurately the phenomena which it observes: self-psychology has an additional problem," "to understand, to obtain a fuller understanding of the relations of selves, and to acquire a deeper acquaintance with one's own nature";[24] and this is decidedly a metaphysical problem.

To these criticisms of the self-psychology concept, Professor Calkins replies that they are based upon an unwarranted confusion between the philosophical and psychological conceptions of the self, which are in reality quite distinct.[25] Philosophy studies "the ultimate nature of every phenomenon of science, . . . and it seeks not only to relate each phenomenon with every other, but to fit it into a complete scheme of reality. . . . As opposed to philosophy, on the other hand, psychology sturdily re-

[22] *Philosophical Review*, IX, p. 495 (1900).

[23] *Inf.*, Chap. IV.

[24] Curtis, *American Journal of Psychology*, XXVI.

[25] *First Book*, p. 276. *Cf. Phil. Rev.*, IX, pp. 491 f., and other references on this paragraph.

fuses to study the nature of the soul, its permanence or immortality and its relation to matter, and simply analyzes the forms of self-consciousness, or studies people in their social relations."[26] "Psychology does not reason about the place of its selves in total and ultimate reality, but simply accepts them on their face value as observed facts."[27] "Obviously, therefore," Miss Calkins concludes, "the self cannot be drummed out of the psychologist's camp by arguments directed against one form or another of the philosophical conception."[28]

But this defence, perfectly true as it is in itself, quite misses the point of the criticism. The critic himself insists upon this same distinction, but points out that the psychological conception of the self is that of a mere "interrelated system of mental phenomena"; and that any deeper conception of something which "expresses itself through" or "has" ideas, feelings, sensations, etc., is necessarily a philosophical conception. We may define psychology as the "science of selves" in the same way that we may define physical science as the "science of nature," but neither is a very illuminating definition if we adhere to the empirical conception of "self" and "nature"; whereas, if we go beyond that empirical conception in either case, we pass from science to metaphysics. It is better, then, for psychology to avoid such a term as "self" altogether in its general conception of its field of study.

43. *The Alleged Universality of Self-Consciousness.*—Miss Calkins bases her conception positively on "the testimony of introspection,"[29] the alleged empirical fact that self-consciousness is always present, that "there is no consciousness which is not self-consciousness" (39). But the great mass of psychologists deny this so-called "fact of introspection." If Miss Calkins claims, says Professor Titchener, for example, that

[26] *Introduction*, p. 5.
[27] *Psychological Review*, XIII, p. 67.
[28] *First Book*, p. 276.
[29] *First Book*, p. 278.

"the self-attitude is introspectively discernable in every consciousness, then I can only say that her mind must differ from mine not specifically but generically. Self-consciousness is, certainly, part of the subject-matter of psychology; but it is I think, of comparatively rare occurrence. And it would seem more natural . . . to treat it as one among the whole number of mental functions than to make it the differentia of a whole psychology."[30] In a very thorough, though modestly entitled, "systematic experimental introspective" study of the phenomenon of self-consciousness, published in *The American Journal of Psychology,*[31] the same critic has shown, from the reports of a number of graduate students and teachers of psychology, that "self-consciousness is, in many cases, an intermittent and even a rare experience" and that descriptions of it when it does occur vary considerably.

One instance of a definition of a mental process from the point of view of self-psychology will suffice, I think, to illustrate the failure of that point of view. Perception, says Professor Calkins, involves an awareness "that I am sharing the consciousness of other perceiving agents," as distinguished from imagination which lacks this awareness (41). But, objects Professor Margaret F. Washburn, this is simply not the case. "A perception never under ordinary circumstances involves a consciousness that other people share one's experience. When I sit alone in my study and look at my bookcase, I have not the slightest reference to other minds in my mental attitude. Subsequent reflection assures me that other people would share the bookcase experience if they were here, but I do not distinguish the perceived bookcase from an imagined bookcase by consciously referring to other minds at all."[32] Reference to selves, then, is a matter of after-reflection rather than of immediate experience and consequently a logical or metaphysical rather than a psychological affair; and what is

[30] *Philosophical Review,* XV, p. 91.
[31] XXII, pp. 540-552.
[32] *Journal of Philosophy,* etc., II, p. 715.

true of perception and self-psychology is true of all other mental phenomena.

Now if self-psychology is to rest its defence on empirical considerations—and, of course, it must do so if it is not to forfeit its claim entirely—and if the alleged facts of introspection prove to be by no means universal, it would seem that there is nothing left for self-psychology to do but accept the inevitable. Professor Calkins, however, is not to be dismayed by the opposition of inconvenient facts.[33] "The self-psychologist has no way of answering an opponent who asserts, 'I have no consciousness of self.' In other words, psychology as science of selves can be studied only by one who believes, or assumes, that he is directly conscious of himself. But even to an opponent who denies the fact from which he starts, the self-psychologist can at least show the plausibility or respectability of his position by pointing out, first that some or all of those who deny the existence of a self-for-psychology implicitly assume the existence of such a self; and second, that many psychologists of admitted worth explicitly adopt the conception.

"To substantiate the first of these statements" Miss Calkins refers to the universal use of the term "I" by psychologists of every school in describing conscious phenomena—as, "*we* find in our consciousness only ideas, feelings, etc."; "*I* attend to a color," "*I* perceive objects"; and insists that the opponent of self-psychology should avoid such terms in his descriptions. Well, we reply, so he does in his severest moods. and it is only to obviate the charge of pedantry or unnecessary circumlocution that he does not always do so. Just as the astronomer says for brevity, "Alpha Centauri crossed the meridian at $10^h\ 13^m\ 5^s$," so the psychologist says, "I perceive objects": when he is considering the general constitution of the sidereal universe, however, the astronomer exercises greater care in the use of his words, and so does the structural psychologist when he is analyzing a psychosis or conscious mo-

[33] *First Book*, pp. 278-280.

ment most precisely. If one says at one time, "I perceive objects," he will probably on another occasion remark that "a percept is made up of sensations and memory images," or some such thing, without being conscious of any inconsistency between the two statements, or of the former expression as being any truer or less true scientifically, or more significant, than the latter. And as to "assuming the existence of a self" when making these assertions, this is far different from implying that every experience involves a *consciousness* of self. "one may 'assume the existence of a self' without assuming that one is always conscious of that self"[34]—the former is an assumption to be justified on philosophical grounds, the latter one to be verified or rejected on grounds of introspection.

Finally, Miss Calkins claims in defence of her views not only the "some or all" of her opponents who "*implicitly* assume the existence of" a self, but also the "many psychologists of admitted worth" who "*explicitly* adopt the conception"[35]—naming Professors Ward, Judd, and others. But an examination of the references shows nothing more than occasional *obiter dicta* about psychology and the self in which the latter term hardly means more than "mind" or "sum-total of mental phenomena," and by no means the self which "expresses itself through" those phenomena. The defence, therefore, falls through at all points.

44. *The Indefinability of the Self.*—In a monograph written in German, and entitled "Der Doppelte Standpunkt in der Psychologie," Miss Calkins writes:[36] "This I, the self or subject, cannot, of course, be defined, for it is the most intimate, most fundamental thing that we know, and on that account cannot be reduced to other terms. This I is simply the I; everyone knows for himself what it is."

Now it is perfectly possible to know a thing without being able to define it: everything individual is indefinable just as

[34] Josephine N. Curtis, *American Journal of Psychology*, XXVI, p. 96.
[35] *First Book*, pp. 278-280.
[36] Pp. 34 f. Quoted by Curtis, *op. cit.*, p. 73.

far as it is individual, since to define means to relate the object defined to other objects of a similar nature already known. The unique, therefore, cannot be defined; and if, as Miss Calkins asserts,[37] the self is unique, it is as such indefinable. And yet the self—mine and yours—the individual, the unique, is perfectly knowable. But only the definable can be a fit object of scientific study: to define, to point out the essential characteristics of a thing, is a central problem of science, and what cannot be defined cannot be described or explained in any systematic, scientific fashion.

Professor Eleanor A. McC. Gamble, joining bravely in the defence of self-psychology against its critics, insists that we do not find the self "*by* introspection, but *in* introspection. Miss Curtis asks: 'What answer can Miss Calkins make to the person who says, "I do not know what the I is"?' The retort is easy. Miss Calkins would ask, 'Who is this I who does not know what the I is?' The self is the introspector. When I can see my own eyes without a mirror, then I shall be able to find my own self by introspection."[38] But the would-be champion exactly gives away her claim by her admission. Introspection is the psychological method, and only that which can be an object of introspection can be "the basal fact of psychology." The self as "introspector," which can be found "not *by* introspection but *in* introspection," is the "pure ego" of metaphysics, not the "empirical Me" of psychology; and we come back again, for the purposes of science, to the only empirical self there is, namely, "the sum-total of all mental phenomena."

45. *Self-Psychology as Reconciliation of Structuralism and Functionalism.*—It will be remembered that Miss Calkins rejects structuralism and functionalism as abstract and artificial, and offers her own view as a concrete reconciliation of the other two. This reconciliation is to be accomplished (1) by recognizing the functional point of view as at bottom and

[37] *First Book,* p. 3; etc.
[38] *Psychological Bulletin,* XII, p. 196.

when carried to its logical conclusion identical with the point of view of self-psychology, and (2) by giving to the structural method of treatment a place alongside of but subordinate to the profounder method which describes all mental processes as varying expressions of a self (38, 41).

A study of the actual results produced by applying the principle of the "double standpoint" or twofold treatment of mental processes to the problems of mental life inevitably leaves the investigator, however, it is to be feared, with the impression of two distinct sciences rather than of a single science with two mutually dependent divisions. And this impression becomes more firmly fixed when we find that the self-psychology point of view is admitted to be of value only for descriptive purposes, and that the structural method alone gives a causal explanation of mental phenomena. But every true science should cover both the problems, and to distinguish them thus sharply is virtually to divide psychology into two sciences.

As to the abstract and artificial nature of structuralism and functionalism, that is no valid objection to them, since all science is as such abstract and artificial (*inf.*, Chap. IV). Every science, in order to give its attention undisturbedly to one special group of phenomena, voluntarily excludes from its consideration certain questions which naturally arise but are outside its own field. To Miss Calkins's assertion that in conceiving psychology as science of ideas we inevitably raise the question, Whose idea? Miss Curtis pertinently replies that "many psychologists have conceived psychology as science of ideas without raising the question: indeed, these psychologists see no more necessity for raising it than the physiologist sees for asking 'Whose muscle?' ".[39] The question is there, perhaps, but it is a philosophically rather than a "scientifically relevant" question.

Again, as to the claim that "psychology is most naturally"

[39] *Psychological Bulletin*, XII, p. 70, n. 11.

treated as self-psychology,[40] this is unfortunately one of the most serious arguments against that treatment. It is perfectly true that it is most natural to describe mental processes as expressions of a self, or as products of a faculty, but this is the very method of treatment which modern scientific psychology has been struggling to banish from the world. The most natural way of treating anything is to take it just as it is, uncritically and unreflectively, and this is the method of common sense which yields for us the casual knowledge of the "plain man"; the scientific way, on the contrary, is to analyze, to criticize, and to formalize the facts of everyday experience, and in doing so science is preëminently abstract and artificial, and not natural at all. "If, then, self-psychology is more 'natural' than other psychology, in the sense of standing nearer to the view of the plain man, self-psychology loses thereby rather than gains; for the more 'natural' or common-sense-like it gets, the less scientific it becomes."[41]

46. *Self-Psychology and Sociology.*—Just one more point before concluding. According to Miss Calkins, "the basal fact of psychology is the individual self in its relations, primarily social relations; the unit of sociology is the interrelated system of selves," "the social organism," "the community."[42] The former portion of this sentence is what we have in the preceding paragraphs been engaged in confuting, the latter portion seems to express a truth provided we identify the word "unit" with the earlier term "basal fact."

If, however, we substitute for the rejected statement, the following—"the basal fact of *individual psychology* is the individual experience, the interrelated system of which experiences constitutes what we call the self"; we may then assert that the basal fact of *social psychology* is that self as above defined, in its relations to other selves; and that the basal fact of *sociology* is, as Miss Calkins tells us, "the interrelated sys-

[40] *First Book,* p. vii.
[41] Curtis, *Psychological Bulletin,* XII, pp. 96 f.
[42] *Psychological Review,* XIII, p. 67.

tem of selves" which constitutes "the social organism." We have, then, this hierarchy of "units" or "basal facts"—the individual experience, the self as interrelated system of such experiences, and the community as interrelated system of selves. In accepting this view we give credit to what is undoubtedly valuable in "self-psychology" without admitting its claim in the field of individual psychology, and we can then indorse the statement of Miss Gamble that "self-psychology is worth while, not because it tells us anything worth knowing about the self in itself, that self which is not open to introspection [—and is therefore not a psychological object at all, but a philosophical one—] but because it gives standing ground for the scientific treatment of the relation of person to person."[43]

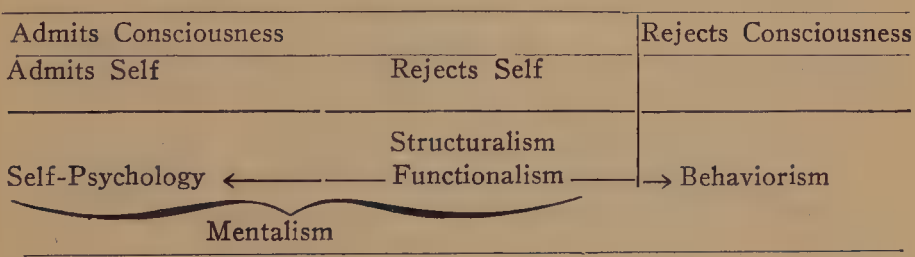
2. *General Conclusions.*

47. *The Relations of the Contemporary Schools.*—Self-Psychology and Behaviorism, though both of them are more closely allied to functionalism than to structuralism, are at opposite extremes in their doctrine of what constitutes "the basal fact of psychology." *Self-Psychology* accepts both the concept of the Self and that of Consciousness as fit subjects for psychological investigation, though of course regarding the former as "basal" and the latter as secondary to it; *Behaviorism* rejects both concepts; the intermediate schools accept Consciousness, but reject the Self. The respective claims of each can be justified only by actual trial as to their usableness in scientific psychology, and we have been contending in the above pages that such a pragmatic test demonstrates that whereas Consciousness is a proper psychological concept, the Self as anything more than the system of contents or processes is a metaphysical concept, and as such outside the field of scientific psychology.

In a table which will be found at the bottom of page 85 I endeavor to illustrate concisely the relations of the various schools.

[43] *Psychological Bulletin,* XII, p. 199.

48. *The Definition of Psychology.*—From our discussion and comparison of the various definitions and concepts of psychology now current, we should be able to derive a positive definition which shall avoid the errors of the individual schools and yet allow for the full intension of the concept. Such definitions in common use as "science of mental states," "of mental processes," "of consciousness" and the like, must be rejected as too narrow—the first because of its overemphasis of the structural position, the second because of its overemphasis of the functional position, and the third because it implies the non-existence of a subconscious field.[44] Each of the definitions, "science of mind" or "of the mind," "science of experience," "of mental phenomena," or "mental life" indicates briefly just what the subject-matter of psychology is. Of these, probably, "science of mental phenomena" is the most accurate, but as all sciences have to do with phenomena, the word is hardly necessary to the definition. "Science of mental life" allies psychology most closely with the biological sciences, and therefore has advantages from that point of view. "Science of experience" is perhaps a little too vague. The simplest definition is, after all, the most natural and common one, "the science of mind." This cannot be criticized as too broad, provided the significance of the word "science" is appreciated and the term "mind" carefully defined; and of course no definition of any science can stand alone, or be thoroughly un-



(The arrows indicate that Behaviorism and Self-Psychology are both developments of Functionalism, but in opposite directions.)

[44] This problem has not yet been touched, but will occupy all of the later chapters VII and VIII; and the point is important enough to be mentioned, at least, in the present connection.

derstood until the terms it uses have been themselves further defined.

TABLE IV

THE CURRENT CONCEPTS OF SCIENTIFIC PSYCHOLOGY

Schools and Leading Representatives	*Typical Definitions*
Structuralism (Wundt, Münsterberg, Titchener)	Science of mental states or contents
Functionalism (Angell, Judd)	Science of mental processes or functions
Radical School (Pillsbury, McDougall)	Science of behavior
Behaviorism (Watson, Frost, Holt, Bode)	Science of behavior
Self-Psychology (Calkins, Baldwin, Royce, Ward, Stout, Brentano?)	Science of the self

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BOOK II

THE FIELD OF SCIENTIFIC PSYCHOLOGY

CHAPTER IV

Psychology and Metaphysics

49. *The Problem of the Basis of a Scientific Psychology.*—We have now advanced to the point where we should be prepared to formulate and understand our problem, the problem upon the discussion and solution of which we shall be engaged throughout the remainder of this book. This problem is, in briefest terms, the problem of the basis of a scientific psychology, and may be stated most concisely in the form of a question, namely: What are the essential conditions of a *complete,* and at the same time *independent,* science of psychology—*i.e.*, independent alike of *metaphysics* on the one hand, and of the various *biological sciences* on the other?

In answering this question we shall find that the determination of the essential conditions of *completeness* depends upon the prior determination of the broader principles underlying the *independence* of scientific psychology, and the forwarding of the latter endeavor involves in its turn two subsidiary problems: first, the differentiation of psychology from metaphysics; and, second, the differentiation of psychology—not from the biological sciences merely, for that has to a large extent been done already—but from the non-mental sciences in general.

1. *The Problem of Science.*

50. *The General Problem of Science.*—All science[1] has for its problem the systematic *Description* and *Explanation* of facts or phenomena. By a fact or phenomenon is meant any object of observation, or of direct and immediate (unmediated) knowledge; or whatever conceivably might become such.

[1] I confine the ensuing discussion entirely to the field of "pure" as distinguished from "applied" science.

Facts or phenomena constitute the materials or data of all sciences, and the systematic description and explanation of those facts constitutes the twofold problem of science. Each individual science limits itself to the investigation of some particular group of facts—psychology, to that group of facts known as "mental," whatever that term may later be defined to mean.

51. *Scientific Description* is distinguished from ordinary or "commonsense" description in two ways—(1) in being *analytical,* and (2) in being *systematic.*[2] In other words, and in the first place, the ordinary unscientific "man in the street" describes the facts which come to his observation just as they are in their general outlines, whereas for the scientist this is only the first step in description, and must be supplemented by analysis of the phenomenon into its constituent parts, and finally into its *elements* or those parts which cannot be further analyzed; for all phenomena, except those which can be shown to be elementary already, are in themselves complex and analyzable into constituents which *are* elementary. In the second place, science has for its ideal the arrangement of its facts, which ordinarily come to observation in no particular order and with no particular relation to one another, into an organized *system,* in which every fact has a place in relation to every other fact of its "class," and every class of facts has its proper relation to every other class.

The problem of scientific description, therefore, is itself threefold: (1) *Definition and General Description,* in which so far, except for greater accuracy, science is hardly distinguishable from commonsense; (2) *Analysis,* which continues until finally the elements, or further unanalyzable factors, of

[2] "By the description of an object" says Professor Titchener, "we mean an account so full and so definite that one to whom the object itself is unfamiliar can nevertheless, given skill and materials, reconstruct it from the verbal formula." (*American Journal of Psychology,* Vol. XXIII, p. 165, 1912). This definition states the general nature and aim of description, but does not discriminate scientific description from description of the ordinary type.

the phenomena studied have been disclosed; and (3) *Classification,* or arrangement of the facts into classes and finally into a single organized system including all the phenomena of the groups studied by the particular science in question. If, then, psychology is to be a complete and independent science, it must have for its first main problem the description—*i.e.*, general description, analysis and classification—of mental phenomena.

52. *Scientific Explanation* is the determination of the conditions under which the facts to be explained occur, and without which they do not occur. The procedure ordinarily consists (1) in the *formulation of some "law"* summing up the various conditions and their results, and (2) in the *application of this law* to the fact to be explained, by showing the fact to be a special instance of the general law. A "law" in the scientific sense is merely a summary statement in general terms of certain observed uniformities in the order or relations of phenomena—a brief statement "in mental shorthand of as wide a range as possible of the sequences of our sense-impressions."[3] The fact is not explained by the law, but by the other facts (the "causes") which according to the statement of the law are conditions of the fact to be explained.

For example, the law of gravitation is a brief statement of the uniform relation which subsists between the motions of various particles of matter in the universe. The fact that a book falls from my hand to the floor when the support of my hand is removed is not explained by the law of gravitation, but by the fact of the removal of the support of my hand (the "cause" of the fall); the whole sequence of events being one instance out of the numerous instances of the falls of things (and other allied phenomena) which occur constantly in the world, and which the "law of gravitation" sums up in one brief formula.

53. *The Concept of Causation:* Scientific explanation is essentially *causal* in its nature, and the problem of scientific ex-

[3] Pearson, *The Grammar of Science* (Third Edition, 1911), Vol. I, p. 112.

planation consists primarily in the determination of the causal connections between the facts that have been observed, described, analyzed, and classified. A fact (B) is held to be sufficiently "explained" for scientific purposes when it is shown to be the *effect* of some antecedent *cause* (A)—*i.e.*, when its existence affords a special instance of the general principle that whenever A (the "cause") takes place, B (the "effect") takes place also. This is all that the concept of cause, the central concept of scientific explanation, connotes—*viz.*, that event upon the occurrence of which a definite consequent event will, and without which that consequent event cannot, occur. The invariable and unconditionally present antecedent is the *cause*, the invariable consequent is the *effect*, and the presence of the cause sufficiently explains the presence of the effect for all scientific purposes. Of course, the presence of the cause may itself, and ultimately will, generate another problem of explanation; but this problem is solved by treating this cause as effect, and searching for its antecedent cause, and so on as far as the needs of the particular problem may demand. But any further or deeper discussion of the phenomenon than this carries the investigator outside the realm of science altogether.

An essential presupposition of all science is the so-called general *principle of causation—viz.*, that every event has a cause, or that every event is the effect of some antecedent cause—and scientific explanation itself is the reference of facts to their causes. If, then, psychology is to be a complete and independent science, it must have for its second main problem that of explaining, or determining the causal relations of, mental phenomena.

54. *The Nature and Kinds of Scientific Hypotheses.*—Any provisional, tentative explanation of phenomena, any suggested law which has not been thoroughly verified, is known in science as an "hypothesis." These are of two distinct kinds, one of which we may call "phenomenal" hypotheses or explanations, and the other "conceptual" hypotheses or explanations.

A *phenomenal* hypothesis is one which explains complex facts or phenomena in terms of simpler phenomena. If a phenomenon is defined, as above (50), as "any object of observation, or of direct and immediate knowledge," then a phenomenal hypothesis is one which makes use of phenomenal terms. In the physical sciences, perception is the mental process used in observing, so that all phenomenal hypotheses in the physical sciences are stated in perceptual terms: in psychology, the method of observation is, of course, introspection. Explanations of the phenomenal type include the explanation of chemical reactions as the result of the combination of certain chemical elements, of sound as the product of vibrations in the atmosphere, of memories as the revival of previous perceptual experiences, and the like.

When a phenomenal explanation of any fact, however, is either impossible or incomplete, science resorts to the second type of hypothesis, namely, a *conceptual* one. A conceptual hypothesis is one which explains facts in terms of specially constructed concepts, which have no known phenomenal (perceptual or introspective) existence. In resorting to this type of explanation, the scientist leaves the world of observed facts altogether, and by an exercise of the scientific imagination purposely constructs a world of fictitious objects, which cannot be perceived by the senses and may have no phenomenal reality whatsoever. Such a procedure is, as was hinted above, followed in any case in which a phenomenal explanation is impossible, and also to supplement phenomenal explanations when the latter are incomplete.

For example, though the phenomenon of sound may be explained in phenomenal terms as the product of vibrations of the atmosphere, which latter is itself a phenomenon that we may become directly conscious of in numerous other ways, the allied phenomenon of light cannot be so explained; hence the science of physics constructs in explanation of the latter the purely fictitious ether, and the purely conceptual theory that light is the result of vibrations in this ether. Again, the con-

cepts of atoms and electrons have been constructed by scientists for the purpose of carrying the explanation of physical and chemical phenomena beyond the point to which purely phenomenal explanations would carry us. So in various other fields: nerve fibres are phenomena, nerve currents are concepts; falling bodies are phenomena, the force of gravity is a concept; and so forth.

Thus science does not merely occasionally resort to conceptual hypotheses, but on the other hand deals largely with conceptual constructions which not only have no perceptual *equivalents,* but may even possess qualities *contradictory* of perceptual experience—as in the attribution of the properties of weightlessness and frictionlessness to the hypothetical ether. Mathematics makes unusually free use of such impossible and contradictory concepts—as, for instance, its notably contradictory concept of the square root of minus 1, etc.; but these are absolutely essential to any advance in mathematical, or any physical, science. And if this is true of the physical sciences, psychology, if it is to be complete, must be at liberty also to make free use of conceptual as well as phenomenal hypotheses in explanation of its facts.

55. *The Validity of Conceptual Hypotheses.*—But the scientist must not be permitted to run amuck in the field of fictitious concepts. It is not merely that a concept satisfies the scientist's vanity, or his love of creating something, which justifies the use of that concept. There are just two tests of the validity and *raison d'être* of a conceptual hypothesis—a theoretical test and a practical test. (1) The *theoretical* test is that the hypothesis or concept in question does actually increase our *understanding* of the facts; and (2) the *practical* test is that by means of the proposed concept or hypothesis we are enabled to *predict* and *prepare* for future recurrences of those facts, and perhaps to *produce* or *control* them. If a conceptual hypothesis satisfies both of these tests it is fully justified; if one of them, it is partially justified; if neither of them, it is not justified, and should be rejected.

56. *Is Science purely Descriptive?*—Many students of the subject of scientific method deny that science explains facts at all, and insist that its function is purely descriptive. Among these, two are especially prominent—Karl Pearson[4] and Louis T. More.[5] According to Pearson, "the object of science is to describe in the fewest words the widest range of phenomena."[6] "Science answers no *why*—it simply provides a shorthand description of the *how* of our sense-impressions."[7] Scientific "laws simply *describe,* they never *explain,* the routine of our perceptions." The law of gravitation, for example, "is a brief description of *how* every particle of matter in the universe is altering its motion with reference to every other particle. It does not tell us *why* particles thus move."[8]

Of course, we may reply, this is largely a matter of defining what we mean by explanation, and what we shall mean by it in this present book we have already stated quite fully enough. If we mean by explaining, "explaining fully," then, of course, we must admit at once that science does not explain; but if we mean, as we do, merely the determination of the causal relations of things, in the sense of the term "cause" above defined (55)—the reference of facts to their causes—then we have a right to insist that explaining is one of the essential problems of science. Explanation, it is true, is hardly more than an especially comprehensive description; and no scientific explanation is final, but at once arouses the question of how to explain the explanation; but notwithstanding all this, explanation is something more than merely analyzing and classifying, and should be treated as distinct from description. *Conceptual* explanation, moreover, is not in any sense descriptive, since we can only "describe" phenomena.

Professor More's criticisms of scientific explanation are di-

[4] *The Grammar of Science,* Vol. I (Third Edition, 1911).
[5] *The Limitations of Science* (1915).
[6] *Op. cit.,* p. 339.
[7] *Op. cit.,* p. 333.
[8] *Op. cit.,* p. 99.

rected more particularly against the possible danger of confusing scientific explanation, especially when of the conceptual type, with metaphysics. "The domain of physics" he says, "is concerned with the discovery of phenomena and the formulation of natural laws based on postulates which are determined by experience and generally accepted as true; the causes of phenomena . . . lie in the province of the metaphysician." The problems of the nature of the ether, the shape of atoms, etc., are metaphysical rather than scientific problems. This would rule out of science all conceptual or non-phenomenal hypotheses. "This does not mean," he adds, "that such questions should not be discussed, but the method of this discussion and the results obtained are properly the method and results of metaphysics, and are not in the category of physical phenomena and laws."[9] Again, "men of science have two principal functions to perform; first, to observe the phenomena of the world, and when certain connections and differences are found in these phenomena, to classify them under laws." (Not, be it noted, to *explain* them by reference to laws). "But, allured by their great and legitimate success, they have also tried to discover the hidden causes of phenomena, with the result that a sort of fictitious world has been created by them, in which the laws of objective, or physical, phenomena are inextricably confounded with the deductions of subjective psychology. Science is metaphysical, and at the same time pretends to supplant metaphysics."[10]

How far Professor More's strictures on the metaphysical tendency of modern science may be justified we shall be more competent to discuss after we have become familiar with the problem of metaphysics itself;[11] but the writer's insistence that explanation and the determination of causes, and the use of conceptual hypotheses, are not scientific, we have already condemned in our previous discussion.

[9] *The Limitations of Science*, pp. 113 f.
[10] *Op. cit.*, pp. 187 f.
[11] *Cf. inf.*, (60).

TABLE V

Stages of the Scientific Method

I. THE ACQUISITION OF FACTS: Observation

II. THE DESCRIPTION OF THE FACTS

1. *Definition and General Description*
2. *Analysis* of the facts into their constituent parts or factors; ultimately into their *Elements*
3. *Classification:* arrangement of the facts into Classes; ultimately, into a *System* of all the facts of the assigned group.

III. THE EXPLANATION OF THE FACTS.

1. *Formulation of Laws:* determination of *Causes.*
2. *Application of the Laws:* reference of facts to their causes.

2. *The Problem of Metaphysics, and its Relation to Science.*

57. *The General Problem of Metaphysics.*—The keywords of the problem of science are Description and Explanation, the keyword of the problem of metaphysics is *Interpretation.* That is to say, metaphysics has for its problem the interpretation of phenomena. Now, to "interpret" anything is to determine its *meaning.* If the fundamental presupposition of all science, without accepting which no science would be possible, is that every fact, every event, has a cause; the fundamental presupposition of metaphysics is that every fact has a meaning, and its problem is to determine what are the meanings of facts—*i. e.,* to interpret them.

Again, philosophical interpretation is *teleological—i.e.,* it has to do with the *purposes* or "ends" of things. Science has to do entirely with causes and ignores purposes: the aim of scientific explanation, as we have seen, is to discover the causal connections of phenomena. Philosophy, on the other hand, has to do entirely with purposes, and ignores causes: the aim of philosophical interpretation is to discover the purposes or teleological relations of phenomena. From the philosophical point of view, each fact is treated not as the effect of some antecedent cause, but as the expression of a Meaning or as the fulfilment of a Purpose.

Once more: science, in its study of physical and mental phe-

nomena, completely ignores the *values* of things—their utility to man, their beauty, or their eternal significance—but for the philosopher value is everything, the fact nothing except so far as it is a symbol of a value. From this point of view, the metaphysical problem may be defined as that of *evaluation,* determining the Values of phenomena.

Science, then, tells us what the facts *are,* and how they have come to be: metaphysics attempts to determine for us their meanings, their purpose in the universe, and their eternal worth. This being the case, of course, science must, in its descriptive aspect, at least, precede metaphysics—we cannot know what facts mean until we already know what the facts are, we cannot interpret the facts until we have first described them. Scientific description, then, is as necessary a preliminary to philosophical interpretation as it is to causal explanation, but whereas description is an end in itself to the scientist, as well as a means toward attaining the end of explanation, it is for the philosopher *merely* a means toward the true end of interpretation.

The problem of rational or *metaphysical psychology,* as a branch of metaphysics or philosophy in general, is, therefore, the interpretation of mental phenomena in terms of Meaning, Purpose, and Value.

58. *The Artificiality of Science.*—If it is true that science ignores value, then the artificiality of scientific method, the abstractness of its content, and the incompleteness of its point of view must be at once evident. For the obvious fact of our daily lives is that "we live in a world of values."[12] "We," says Professor Titchener, "approve good manners; we avoid extravagance and display; we aim at efficiency; we try to be honest; we should like to be cultivated. Everywhere and always our ordinary living implies this reference to values, to better and worse, desirable and undesirable, vulgar and refined." But all this merely emphasizes the fact "that ordinary living is not scientific. . . . For Science deals, not with values,

[12] Titchener, *A Beginner's Psychology,* p. 1 (1915).

but with facts. There is no good or bad, sick or well, useful or useless, in science. When the results of science are taken over into everyday life, they are transformed into values; the telegraph becomes a business necessity, the telephone a household convenience, the motor-car a means of recreation; the physician works to cure, the educator to fit for citizenship, the social reformer to correct abuses. Science itself, however, works simply to ascertain the truth, to discover the fact."

"Again," continues Professor Titchener, "we live in a world whose centre is ourself." "This does not necessarily mean that we are all selfish," but that "we live in a universe which revolves about the Me." "And this, once more, is the same thing as saying that our ordinary living is not scientific. For science, which deals with facts, is on that account impersonal and disinterested." "Science aims at truth: it deals with facts, with the nature of things given, not with values or meanings or uses; and it deals with these materials impersonally and disinterestedly."[13]

Professor Münsterberg has on numerous occasions pointed out the same truth. "In our practical experience things have their meaning just through our attitude; their existence is bound up with our interest in them." But not so in the scientific realm. The standpoint of the scientist "is an artificial one; it involves certain abstractions. The world is in a way cut off from our life-attitudes, and has been made a mere object of awareness; but"—and here lies the justification for this abstractness and artificiality of science—"in this abstraction lies at the same time its incomparable strength. It allows us to understand the processes in the world as results of laws, and thus to bring them into mathematical relations, and finally to master them and to put nature in harness."[14]

Again. "If the psychologist approaches mental life, he has no interest in asking whether the mental states are valuable or not. He does not care whether the will impulses in the

[13] *Op. cit.*, pp. 2-4.

[14] Münsterberg, *The Eternal Values*, p. 13.

mind are good or bad, moral or immoral, whether the imaginings of the mind are beautiful or ugly, whether the thoughts in the mind are wise or foolish, whether the emotions of the mind are holy or sinful. The dissecting botanist is interested in the ugliest weed as much as in the beautiful flower, the chemist cares for the constitution of the deadly poison as much as for that of the helpful drug. In the same way the psychologist is surely interested in the analysis of the criminal act as much as in that of the heroic deed, in the babbling of the insane mind as much as in the reasoning of the thinker, in the silliest play of the infant as much as in the highest creative processes of the artistic mind. He remains the mental observer who understands and explains mental events without forming a judgment on them. As soon as he begins to evaluate them he oversteps the boundaries of his realm, and is trespassing on the fields of logic, ethics, and aesthetics."[15]

The upshot of these considerations is: (1) That real life, the life of everyday practical experience, is dominated by ideas of values—good and bad, beautiful and ugly, useful and useless, etc.; (2) that science entirely ignores values, and concerns itself disinterestedly with the facts as they are, regardless of their values and uses; (3) that science is, therefore, characteristically abstract and artificial; *but* (4) that it is quite properly so, for by means of the strictly mechanistic method of science we are enabled not only to understand the forces of nature better, but to bring them under control for the benefit of mankind. And if all this is true of science in general, it is equally so of the specific science of psychology.

59. *Psychology and Meanings.*—But at this conclusion one may naturally demur. All that has been said above we may freely admit so far as the physical sciences are concerned, and yet we may seriously hesitate to accept the distinction in its application to mental phenomena. Whatever the situation with regard to physical things, one may say, is it not true that the very essence of a mental process—an idea, a memory, a

[15] *Psychology, General and Applied,* pp. 9 f.

perception—is its meaning, its import? But as a matter of fact the distinction applies as well to the mental world as to the physical, and the question must be answered in the negative. The evidence that mental processes "may be treated scientifically as bare facts" and "are not intrinsically meaningful" is set forth by Titchener under six heads.[16]

In the first place (1) "meaning may be stripped from the mental process to which it normally belongs." (*E.g.*, a word —"house," for instance—will lose all its significance and become a mere meaningless sound if repeated aloud to oneself several times). On the other hand, (2) an experience at first meaningless may later "take on a meaning"; as, for example, when that which at first seems to be a mere tangle of lines turns out, on further investigation, to be, let us say, a meteorological record; or when a series of meaningless marks comes later on to be interpreted and understood as a sentence in Greek or Hebrew. (3) "An experience and its meaning may be disjointed in time"; as when one fails to see the point of a joke until sometime after hearing it, or in the reverse and very common situation in which one knows what one wishes to say and yet cannot for a while put the meaning into words. (4) "One and the same experience may have several meanings" or possible meanings; as a word, "a bit of bad handwriting, a distant object, an obscure patch in a painting," etc. Or, (5), reversing the last-named distinction, "one and the same meaning may attach to several experiences"; as when a word and a graphic symbol may represent the same idea (*e.g.*, the word "triangle" and the mathematical symbol "Δ"). Finally, (6) meaning and mental process are independent variables; "richness and fullness of experience do not necessarily correspond with wealth of meaning," nor does "poverty of experience . . . necessarily mean loss or reduction of meaning." (*E.g.*, complexity of style and theme certainly does not conduce toward clearness of understanding, nor does the significance of a word depend upon the number of its syllables).

[16] *Op. cit.*, pp. 26-30.

And yet, notwithstanding the incontestable truth of these distinctions, the critic may remain unconvinced. Do not, he may insist, all our experiences in their inmost nature *mean* something? Is not a perception always a perception *of* something, an idea an idea *of* something? Sensations in themselves may be meaningless; but do we as a matter of fact ever actually experience a "pure," "mere," "meaningless," sensation? "We have no reason," admits Professor Titchener,[17] "to believe that mind began with meaningless sensations, and progressed to meaningful perceptions. On the contrary, we must suppose that mind was meaningful from the very outset." "What, then, from the psychological point of view, *is* this meaning?" In other words, "What mental processes . . . are the scientific equivalents of what we know in everyday life as meaning?" Or, most briefly stated, "what processes *carry* the meaning?"[18]

The answer is, that from the psychological point of view *meaning is context.* To elucidate:—Every *perception* is analyzable into an associated group of sensations and images, of which the sensations constitute a central core and nucleus, and the associated images form as it were a context or "fringe" which binds together the whole and gives it a definite meaning. Thus, when I hear the sound of a bell, the sound sensations call into consciousness at once a number of associated visual, tactual, motor, and possibly further auditory, images derived from past experiences of this particular bell or of others more or less like it; all these fusing together into a single experience which I call "the perception of a bell," and in which the sound sensations occupy the centre of attention, and the associated images constitute the fringe of meaning that makes the sensations not "mere" sensations but symbols of a physical object. Likewise, in visually perceiving an orange, the sensations of color and brightness arouse contextual images of smell, taste,

[17] *A Test Book of Psychology,* p. 369.
[18] *A Beginner's Psychology,* pp. 117 f.

touch, which enable us to "recognize" the object—*i.e.*, give a *meaning* to the sensations.

Similarly, every *idea* has a core or nucleus of images, and a fringe of associated images and possibly also of sensations (kinaesthetic in most cases) which give meaning to the nuclear images. The most efficient nuclear symbol of the idea is the *word,* (as "triangle," "horse"), but a representative image (as the figure Δ, or the picture of some particular horse) may do as well, provided it is consciously accepted as a mere symbol of the concept and of no interest in itself.

In all these cases, the meaning of the perception or idea is "carried" by the contextual images or sensations, and it is context which gives meaning to every experience, and yet it would be inaccurate to say that the meaning of a sensation or symbolic image is through and through nothing but its associated images or sensations, for this would be a violation of the principle that psychology is not concerned with meanings All that is implied is that the meanings of our experiences are represented[19] in the realm of mental processes by "the fringe of related processes that gathers about the central group of sensations or images."[20] Psychologically, meaning is context, but logically and metaphysically meaning is much more than psychological context; or, to put it the other way around, whatever meaning may be, psychology is concerned with it only so far as it can be represented in terms of contextual imagery.

[19] Let no epistemologist from my use of this word jump to the conclusion that I am here advocating or binding myself to a representative theory of knowledge. That is a philosophical question of the ultimate nature of the relation between ideas and reality, whereas we are concerned here merely with the principles of scientific method in psychology. The ordinary man knows (or thinks he knows) without introspection or argument that things are and that his ideas are true: the psychologist introspects his consciousness of meaning, and finds in his mind imagery which symbolizes or represents its object. The plain man does not, and perhaps the philosopher should not, dualize mind and world: the psychologist and the physicist must do just that. (*v.* Chap. V.)

[20] *A Beginner's Psychology,* p. 118.

That is to say, the true meaning of the percept of the bell is its reference to the real objective bell; but the bell is not in the mind, and consequently the reference to it cannot be a psychological datum, but is rather a logical or metaphysical problem; this reference to an objective thing may be however, and is, represented *in* the mind by certain contextual images as above described, and these constitute its meaning "translated into the language of" psychology. So the true meaning of an idea lies in its logical reference to an objective system of ideas, but this may be represented subjectively by the contextual images or sensations.

One more illustration, from the *American Journal of Psychology* article above referred to. To say that one is puzzled (*e.g.*) is to use terms not descriptive of psychological facts, but expressive of "the import of a practical situation." Perplexity as a *psychological* condition is analyzable into verbal, organic, and kinaesthetic imagery, and an affective factor; but its primary interest consists in the fact that it is a condition in which one is perplexed *about* something, and this is not a psychological fact but a *logical* one.[21] Psychology, then, is not concerned at all with the reality of our percepts or with the truth, falsity, or logical uncertainty of our ideas, any more than it is with the rightness or wrongness of our conduct, but only with the *constitution* of these.[22]

[21] *Op. cit.*, p. 168.

[22] Professor Titchener works out the distinction between psychological constitution and logical meaning in various special fields very thoroughly though simply in his *Beginner's Psychology*. I append the page references.—

Tactile-motor Sensations: pp. 45-48.

Organic Sensations: pp. 64 f.

Attention: pp. 90-93.

Perception of Distance: pp. 129 f.

Association: pp. 145-149, 162-165, 168 f. (*Cf.* his *Text Book*, pp. 374-378).

Memory: pp. 184-186. (A memory-image *means* past experience, but this meaning is *represented in* the present memory-experience by the as-

60. *Must Metaphysics Be Rejected?*—We have assigned to science the realm of facts or phenomena, and to metaphysics the realm of values. In this, metaphysics is an elaboration of commonsense, as both of these have for their world a world of values.

Many critics, however,—as, for example, Pearson—would demur at this division of the spoils of experience between science and metaphysics. "The material of science," says Pearson, "is coextensive with the whole life, physical and mental, of the universe. . . . To say that there are certain fields—for example, metaphysics—from which science is excluded, wherein its methods have no application, is merely to say that the rules of methodical observation and the laws of logical thought do not apply to the facts, if any, which lie within such fields. These fields, if indeed such exist, must lie outside any intelligible definition which can be given of the word knowledge."[23] Science "claims that the whole range of phenomena, mental as well as physical—the entire universe—is its field. It asserts that the scientific method is the sole gateway to the whole region of knowledge."[24] "There is no sphere of inquiry which lies outside the legitimate field of science. To draw a distinction between the scientific and philosophical fields is obscurantism."[25]

L. T. More, on the other hand, takes an almost contrary position. "The domain of physics," he says, "is concerned with the discovery of phenomena and the formulation of natural laws based on . . . experience . . .; the causes of phenomena and the discussion of the postulates of science lie in the province of the metaphysician. This does not mean that such questions should not be discussed, but the method of their discussion and the results obtained are properly the method

sociated images which constitute the "recognition" feeling or "feeling of familiarity.")

Thought and Language: pp. 267-275. (*Cf. Text Book,* pp. 517 f.)

[23] *Op. cit.,* p. 15.

[24] *Op. cit.,* p. 24.

[25] *Op. cit.,* p. 37.

and results of metaphysics, and are not in the category of physical phenomena and laws."[26] "The limitations of science are due solely to the fact that there are, in addition to material forces, others of an essentially different kind which may be called, for lack of a better name, spiritual powers. And so long as men of science restrict their endeavor to the world of material substance and material force, they will find that their field is practically without limits. . . . And it should distress no one to discover that there are other fields of knowledge in which science is not concerned."[27]

Both Pearson and More agree, as we have already seen (56), that the problem of science is description only; but whereas More is willing to hand over to another discipline, metaphysics, the problem of explanation and hypothesis, Pearson denies that there can be any room for metaphysics in the thinker's universe. The reconciliation of the conflict between these two writers is to be found, I think, in the acceptance of Pearson's claim that the "material" or subject-matter of science is coextensive with the whole universe, physical and mental, and an insistence that the distinction between science and metaphysics is not one of subject-matter but of point of view, problem, and method. The value point of view and the problem of interpretation are metaphysical, whereas science abstracts from value and has for its problem description and explanation—meaning by explanation what has already been asserted of it (52-55); and in the admission of that latter problem we take a stand in opposition both to Pearson and to More. More is right, therefore, in distinguishing metaphysics from science and insisting on its right to exist, but wrong in assigning the problem of explanation to that discipline. No *fact* is outside the field of scientific investigation, but on the other hand a *scientific* study of the universe is incomplete unless supplemented by a *metaphysical interpretation* of the truths which science has worked out.

[26] *The Limitations of Science*, pp. 13 f. Quoted also above (56).
[27] *Ibid.*, pp. 260 f.

3. *Psychology as Science and as Metaphysics.*

61. *Aspects of Personality.*—Persons may be regarded from either one of two quite opposite points of view—(1) as *Objects* of scientific investigation, or (2) as *Subjects* similar to myself to be understood and appreciated. I may, according to my own purpose at the moment, view another personality in either way: I may wish merely to enter into "personal relations" with him—to discover the meaning and purpose of his conversation and behavior (*interpretation*), and thereby share those purposes and meanings with him (*appreciation*); or I may wish to study him scientifically, to discover what processes are going on in his mind—what perceptions, memories, ideas, emotions, desires, etc., are present in his consciousness (*description*)—and how they are related to one another and to his past experience (*explanation*).

As Münsterberg puts it: "In the most trivial conversations or in the most momentous situations of life, the mind with which we are dealing may . . . be to us either a *self into whose purposes we enter, or a bundle of mental states* which are linked together."[28] "If I meet a friend and we enter into a talk, I try to understand his thoughts and to share his views. I agree or disagree with him; I sympathize with his feelings, I estimate his purposes. In short, he is for me a centre of aims and intentions which I interpret: he comes in question for me as a self which has its meaning and has its unity. . . His personality lies in his attitude towards the surroundings, towards the world." Here is one aspect of his personality and one way in which I may treat him. "Yet I may take an entirely different relation to the same man. I may ask myself what processes are going on in his mind, what are the real contents of his consciousness—that is, what perceptions and memory pictures and imaginative ideas and feelings and emotions and judgments and volitions are really present in his consciousness. I watch him to find out, I observe his mental states, I do not ask whether I agree or disagree. . . . What I

[28] *Psychology, General and Applied,* p. 12.

now find is not a self which shows itself in its aims and purposes and attitudes, but a complex content of consciousness which is composed of numberless elements. I might say in the first place that my friend was to me a *subject* whom I tried to understand by interpreting his meaning; and in the second case, an *object* which I understand by describing its structure, its elements, and their connections."[29] "In one case I wanted to *interpret* the man, and finally to *appreciate* him; in the other case I wanted to *describe* his inner life, and finally to *explain* it. The man whose inner life I want to share I treat as a *subject,* the man whose inner life I want to describe and explain I treat as an *object.*"[30]

And "this twofold way of looking into the neighbor's mind shows itself no less when we think of our own mental life. . . . Our love and hate, our likes and dislikes, our agreeing and disagreeing, our thinking of this and of that, are the acts which stand for our personal life. We live in those feelings and emotions, and thoughts; we ourselves are those inner activities. And yet we may consider this same inner life as if we were spectators looking on at that procession of inner events, observing the happenings of our own consciousness [introspection]. Then we give our attention to the structure of our memories and imaginative ideas, perceptions and thoughts; and even our feelings and emotions and volitions then lie before us like objects of which we become aware. . . . A greater contrast can hardly be imagined: on the one side the stream of life in which our will and feeling and thought are to us meaning and expression of our self, and on the other side the neutral taking account of the processes in our mind as if they were a spectacle which we are objectively watching."[31]

62. *Psychology* vs. *Metaphysics.*—"Both ways of looking on man," says Münsterberg, "are constantly needed,"[32] both

[29] *Psychotherapy,* pp. 11 f. Italics mine.

[30] *Op. cit.,* p. 13. Italics mine.

[31] *Psychology, General and Applied,* pp. 12 f.

[32] *Psychotherapy,* p. 12.

are necessary for a thorough and comprehensive understanding of our fellows. "We actually rely on both in every practical situation, and wherever we recognize the one at the expense of the other, we neglect certain life interests. The teacher may look on the pupil in the schoolroom as a free responsible individual and may understand him as a centre of meaning. But if this were all he would neglect the mechanism of that young mind; he might fatigue its will power, overburden its memory mechanism, neglect the hygienic conditions of its working and interfere with the processes of assimilation. On the other hand, . . . the teacher may look on the child only as a mental mechanism, where every change must be understood as an effect of psychophysical causes, and every thought and feeling be regarded as a content of consciousness. But if this were all, the best meaning of instruction would be lost. A naked calculation of causes and effects would intrude where personal sympathy and personal tact ought to control the intercourse. The ideal value of the instruction would be lost. The child would be to the teacher nothing but a case of psychophysical activity [a valueless *object*], instead of being a free individual [a purposeful *subject*] with growing responsibility worthy of personal interest."[33]

Now, "if these two tendencies of practical life," these two distinct ways of looking at personality, "are carried to their extreme systematic form, they lead to two developed systems of psychology, the *causal* and the *purposive*."[34] The causal attitude carried out systematically and applied to personality or consciousness in general becomes scientific *psychology*, the purposive attitude so carried out and applied becomes rational psychology or *metaphysics*.[35]

63. *Corresponding Attitudes toward Nature.*—But there is after all nothing unique about the fact that we may take either

[33] *Psychology, General and Applied*, p. 294.
[34] *Op. cit.*, p. 295. Italics mine.
[35] *Cf. Psychotherapy*, pp. 13 f.; *The Eternal Values*, pp. 16-18.

one of two quite distinct attitudes toward *personality,* for the same thing is true of our relations to the physical world about us, the world of *nature.*

"I see before me the ocean with its excited waves splashing against the rocks and shore, I see the boats tossed on the stormy sea, and I am fascinated by the new and ever new impulses of the tumultuous waves. The whole appears to me like one gigantic energy, like one great emotional expression, and I feel deeply how I understand this beautiful scenery in appreciating its unity and its meaning. Yet would I think that it is the only way to understand this turmoil of the waters before me? I know there is no unity and no emotion in the excited sea; each wave is composed of hundreds of thousands of single drops of water, and each drop composed of billions of atoms, and every movement results from mechanical laws under the influence of the pressing water and air. There is hydrogen and there is oxygen, and there is chloride of sodium, and the dark blue color is nothing but the reflection of billions of ether vibrations. But have I really to choose between two statements concerning the waves, one of which is valuable and the other not? On the contrary, both have fundamental value. If I take the attitude of *appreciation,* it would be absurd to say that this wave is composed of chemical elements which I do not see; and if I take the attitude of physical *explanation,* it would be equally absurd to deny that such elements are all of which the wave is made. From one standpoint, the ocean is really excited; from the other standpoint, the molecules are moving according to the laws of hydrodynamics. If I want to understand the *meaning* of this scene, every reminiscence of physics will lead me astray; if I want to calculate the movement of my boat, physics alone can help me."[36]

The former attitude that we take toward the ocean, toward nature in general, and toward the world of art, is the *aesthetic* attitude, the attitude of appreciation and interpretation—the

[36] *Psychology,* pp. 10 f. Italics mine.

other attitude is *scientific,* the attitude of description and explanation; and both are valid, both are true, both are valuable. Each must be kept separate from the other, because confusion between them will ruin the usefulness of both. As a psychological attitude toward one's friend jeopardizes friendship and a personal attitude toward mind in general makes a scientific study of mind impossible; so physical analysis or dissection of a beautiful flower or picture or musical composition will destroy its beauty, and a sentimental attitude toward either will render a study of it from the point of view of physics impossible.

4. *Psychology and Real Life.*

64. *Psychology and the True Personality.*—All experiences, then, to return to the mental world, are at the same time (1) compounds of sensations, affections, etc., or phases of the stream of consciousness; and (2) expressions of the purposes and inner meanings of the self—according to the point of view. But though this is true, it would be absurd to insist that the two attitudes are equally true to the real inner nature of the mind.

"If you and I talk with each other, I not only take you as a subject whom I am to understand, but I feel myself as a subject who agrees and disagrees, who likes and dislikes what you say, and who wants his own opinion to be understood. It is quite improbable that I am watching my mental states as objects, while we are engaged in our conversation. But if I *afterward* begin to think about it, I may very well call back those ideas and emotions of mine and make them pass before my inner eye as mere mental happenings which come and go like the clouds and the sunshine and the landscape outside." There is no question, however, that "the first standpoint is the more natural one," and the "second a somewhat artificial" though often necessary one. In the same way, "it is more natural to drink water than to analyze it in the laboratory," though "if we want to understand what we can expect from

the water, we must determine its constitution and examine its properties.[37]

The true personality, mental life as it is actually experienced by the individual himself, is certainly not a mere aggregate of sensations, ideas, feelings, etc., but a *living unity,* a system of purposes. Our various acts, feelings, and thoughts are partial phases or expressions of that unitary personality—not distinct entities—*teleologically,* not causally, interconnected. "We remain identical with ourselves in our inner personal life because every purpose is . . . bound up with the general purpose of ourselves." But if, as psychologists, we wish to study our own and other minds scientifically, we must take the more artificial *causal* attitude: "the purposive unity must transform itself into endless complexity, and our [true] self becomes a composite of . . . elements."[38] Thus any scientific study of the mind involves a "tremendous transformation of reality,"[39] the real inner life of personality being transformed into a complex of distinct elements which are in themselves merely constructions of the scientific imagination.

A single instance will help to clarify our point. "Let us take," says Professor Washburn, "the emotion of sympathetic joy. I can describe this as the attitude in which I [*i.e.,* my true unitary personality] recognize and rejoice in the existence of joy in another self. I can also describe it perfectly well in terms of process psychology. The emotion of joy in general may be structurally analyzed into the sensational elements of the idea or ideas occasioning the emotion, the sensational elements resulting from the bodily changes involved. and the resultant affective tone derived from all these sensational components. When the emotion is one of *sympathetic* joy, the only modification that our structural analysis needs is this: the occasioning idea is, in such a case, an idea of the emotion, that is, a weakened reproduction of the emotion, as-

[37] Münsterberg, *Psychology General and Applied,* pp. 13 f.
[38] Münsterberg, *Psychotherapy,* p. 52.
[39] Münsterberg, *Psychology General and Applied,* p. 289.

sociated with certain ideas which mean to us the personality of another—ideas of his appearance and movements or words, perhaps."[40] Professor Calkins instances this[41] as an argument for "self-psychology," but the point of the quotation is rather to emphasize the inadequacy and artificiality of *any* scientific treatment of mental processes.

65. *Physical Science and the Real World.*—Precisely the same situation exists with reference to the physical sciences. To criticize the psychologist because his treatment of mind as a complex of elements is untrue to the real nature of personality, says Münsterberg, is as stupid as it would be "to cast up against the physicist that his moving atoms do not represent the physical world because they have no color and sound and smell. If they sounded and smelled, the physicist would not have fulfilled his purpose."[42] The world of psychology is *not* the world of real life, nor is the physicist's world the world of sensory experience.

So, Titchener: "The world which is most familiar, and to which our response is most direct and certain," is a "world of things and people, of boats and trains, of relatives and strangers, of quarrels and reconciliations, of successes and failures." Physics, however, "deals not with boats and trains, but with masses and distances and velocities; and psychology deals not with quarrels and successes, but with emotions and voluntary actions,"[43] affective elements and conative trends.

Commonsense, we may add in explanation of the above, is interested in boats and trains because we can use them in our daily life, and is interested in our quarrels and successes because they mean something for our future happiness or the reverse. Science, on the other hand, both physical and mental science, is interested in the constitution of these things and in the laws of their functioning, and in their external significance

[40] *Journal of Philosophy,* etc., Vol. II, p. 715 (1905).
[41] *Journal of Philosophy,* etc., Vol. V, pp. 121 f. (1908).
[42] *Atlantic Monthly,* May, 1898, p. 613.
[43] *American Journal of Psychology,* Vol. XXIII, p. 167 (1912).

only so far as a knowledge of this may throw light on the immediately scientific problems.

The concepts of physical science—such concepts, for example, as energy, atoms, electrons, ether, and even matter itself—are as much constructions of the scientific imagination as the psychologist's concepts of mental elements and of mind as a mere sum-total of such elements (54). To take the former as ultimately real is the metaphysical error of *materialism.* Physical science considers the world as a mechanism, and for that reason transforms the reality of the physical world as we know it in our ordinary experience into a world which is not recognizable at all to the man of commonsense.

"It puts in the place of perceivable objects imperceivable atoms which are merely products of mathematical construction quite unlike any known thing." "These atoms are *scientifically true,* as their construction is *necessary* for that special logical purpose"; "but it is absurd to think, with the materialistic philosopher, that these atoms form a reality which is more real than the known things, or even the only reality." "The *physical* science of matter is true, and is true without limit, and without exception: *materialism* is wrong from beginning to end."[44]

In the same way, to regard the mental contents and elements of structural psychology as ultimately real is the metaphysical error of *psychologism.* "Psychology is right, but the psychologism which considers the psychological elements and their mechanism as reality is wrong from its root to its top, and . . . is not a bit better than materialism." "The psychical mechanism has no advantage over the physical one; both mean a dead world without ends and values—laws, but no duties; effects, but no purposes; causes, but no ideals. There is no mental fact which the psychologist has not to metamorphose into psychical elements; and as this transformation is logically valuable, his psychical elements and their associative and inhibitory play are scientifically true. But a psychical element,

[44] Münsterberg, *Psychology and Life,* p. 20. Italics mine.

and anything which is thought as combination of psychical elements and as working under the laws of these psychical constructions, has as little reality as have the atoms of the physicist. Our body is not a heap of atoms; our inner life is still less a heap of ideas and feelings and emotions and volitions and judgments, if we take these mental things in the way the psychologist has to take them, as contents of consciousness made up from psychical elements."[45]

The upshot of the whole matter is that mental and physical science are exactly on a par with reference to the reality of their concepts. "Neither physical objects nor psychical objects represent reality, but both are ideal constructions of the subject"[46]—transformations of reality made for the purposes of science, and so having scientific truth even though not in themselves objectively real.

66. *The Necessity of a Scientific Study of the Mind.*—From our discussion of the problems and methods of science, and of the relations between psychology and real life, two complementary truths with regard to the scientific method of studying the mind stand out sharply before us—(1) the *incompleteness,* one-sidedness, and even unreality, of the scientific view of the mind; and (2) its logical *necessity* and scientific truthfulness. We have seen that a real understanding of the mind of one's friend depends not so much upon an *analysis* of its *contents* as upon an *appreciation* of its *meanings*—an entering into and sympathizing with the feelings and attitudes of the friend, rather than an impersonal observation of his behavior and a critical examination into what lies beyond. And yet there is the complementary truth that this impersonal, critical, scientific method of studying the mind has nevertheless an essential function to perform. Let us see why this is so, and what this function is.

Philosophy, as we have seen, is concerned solely with ends or purposes, science with the means or instruments for the at-

[45] *Op. cit.,* pp. 20 f.
[46] *Op. cit.,* p. 19.

tainment of those ends. Physical science transforms the reality of the living universe into a mechanism of atoms and electrons because it is only through an understanding of the constitution and laws of nature that man has been able to become master of nature and to conform its processes to the fulfilment of his own purposes. In the same way, the psychologist has transformed the reality of the living personality into a mechanism of sensations and affections because it is only through that means that he may become in some degree the master of his own nature and the fashioner of his own destiny. The psychologist wishes "to understand the inner life as a system of causes and effects, and to recognize every experience as the necessary result of foregoing conditions, in order to foresee what will happen in the mind and to influence it. If this is the purpose, any reconstruction of the inner life which helps toward this goal must be welcomed as psychological truth."[47]

It is an important ethical maxim that we should treat other persons always as ends, never as means, and as a rule of moral conduct this is an inviolable principle. But *all* minds—other people's as well as our own—are means *sometimes,* for certain specific momentary purposes. Just as we use material objects as instruments for the attainment of our own ends, so persons may become instruments for the attainment of one another's ends; consequently, an understanding of the mechanism of the mind is necessary if we are to use our own minds as instruments for the accomplishment of our purposes.

The justification for the scientific treatment of the mind, then, is a twofold justification—theoretical and practical—a better understanding of the mind, and a greater ability to control its activity for the fulfilment of our purposes.[48] If the artificial methods of science are helpful in these two ways, they are justifiable; otherwise, not. Professor Creighton has well stated this point. "It is possible," he says, "and often

[47] Münsterberg, *Psychology, General and Applied,* p. 291.

[48] *Cf.* sect. 55, on the Validity of Conceptual Hypotheses.

necessary, to pass from the concrete to the abstract—*i.e.*, to adopt abstract analysis as a *means* to further concrete intelligibility; but . . . the transformation into abstract terms can never be an end in itself, it is justifiable only when the process of abstraction serves to promote an understanding [theoretical justification] and to facilitate control [practical justification]."[49]

Truth for science, then, is always relative to the scientific purpose: it consists not so much in the conformity of scientific concepts to reality as in their practical utility. In other words, these concepts are true for the purposes of science if they are practically or theoretically necessary even though they have no ultimate truth for metaphysics.

67. *The Place of the Contemporary Schools of Psychology.*—The view we have been considering throughout the present chapter should throw new light upon the subject-matter of the preceding chapter, in that it offers a reconciliation of structuralism and functionalism, acknowledging the place of each of these theories as important aspects of scientific psychology and giving "self-psychology" entirely over to metaphysics. *Structural* psychology treats the mind as a complex of sensations, affections, etc., and so has to do primarily with the problem of *description*—general description, analysis, and classification. *Functional* psychology treats mental processes as phases of a continuous stream of consciousness, and so has its primary value in the field of *explanation.* Now both of these are legitimate and scientific aims, but so soon as we discuss mental acts as expressions of the *purposes* of a *self,* we have passed entirely out of the field of science into that of *metaphysics.*

5. *Psychology and Other "Mental Sciences."*

68. *The Mental Sciences and the Fine Arts.*—At this point an important problem arises, namely, as to the relation which psychology bears to the other sciences which have to do with

[49] *Philosophical Review,* Vol. XXIII, p. 166 (1914).

the human mind—the historical sciences, the social sciences (sociology, economics, politics), the linguistic sciences (philology, grammar, rhetoric) the normative sciences (logic, ethics, aesthetics); and to the arts which are the products of the human mind—painting, literature, music, and the rest. Does psychology bear the same relation to these mental sciences that physics and chemistry bear to the material sciences? Are these so-called "mental sciences" indeed sciences at all, in the sense in which psychology has been defined to be a science?

The problem clears considerably if we adopt the distinction first proposed by Professor Max Dessoir, in his *History of Psychology,* between three points of view from which the mind may be, and throughout the history of thought has been, studied. From the beginning, this writer tells us, man has had a threefold interest in the study of the mind—(1) a *religious* interest in the destiny of the soul, (2) a *scientific* interest in the mind as guiding principle of the body, and (3) a *practical* interest in the understanding of individual character. Out of the first of these has developed what Dessoir calls *Psychosophy,* which corresponds to what we have in the preceding pages described as metaphysical, rational, or purposive psychology; out of the second has come what we now know as empirical or scientific *Psychology;* while the third constitutes what Dessoir denominates *Psychognosis,* the understanding of the individual mind.

Most worthy of notice is the above relation between "psychosophy" and "psychognosis," in that both of them, as opposed to psychology proper, approach the mind from the *purposive* rather than the causal point of view; both of them aim to understand and interpret, rather than to explain, their objects; both are concerned rather with motives and meanings than with processes and contents. But along with this close similarity in point of view is to be noticed also this important distinction between them—that psychognosis is concerned entirely with *individual* minds, whereas psychosophy is interested in the *universal,* the nature of the mind as such. From

this distinction of Dessoir's as a base, we can start out more understandingly upon our task of correlating psychology with the other mental sciences and arts referred to at the beginning of this section.

Let us note first of all that when any one of us wishes to behold a true picture of human life and character, it is never to the psychological textbooks nor to the publications of the experimental laboratories that he goes, but rather to the history books, the biographies, the character-studies of the poets and novelists. Of whom do we most naturally think as the greatest portrayers of human character—of Plato and Aristotle, Locke and Spencer, Herbart and Wundt? or, rather, of Shakespeare and Balzac, Xenophon and Macaulay, Plutarch and Vasari? Would Hartley or Reid have depicted the life and character of Samuel Johnson better than Boswell has done? No one would hesitate as to the correct answer to these inquiries, and for the simple reason that everyone knows that it is the purpose of the scientist to analyze and explain rather than to understand and appreciate, and that the historian and literateur understand human nature as it really is far better than the psychologist because they approach it from the purposive rather than the causal point of view.[50] And it is for precisely the same reason that we turn to Wordsworth and Corot rather than to Linnaeus and Darwin for a true appreciation and understanding of the soul of the nature which lies about us.

In the same way, the "normative sciences" are concerned with the *evaluation* of mental life—its meanings, ideals, purposes—rather than with the description and causal explanation of the actual mental processes of reasoning, feeling, and conduct. Logic, ethics, and aesthetics are regarded as branches

[50] It is interesting at this point to call attention to the now forgotten controversy of a half-century ago over Buckle's theory that human history is subject to the same causal laws that govern the history of the earth and the physical universe. Today the purposive theory of history, however, holds the stage unchallenged. (v. Thayer, *Atlantic Monthly*, Vol. 122, pp. 635 ff., Nov. 1918.)

of philosophy rather than independent sciences because of this very fact that, like metaphysics, they view their subject-matter purposively rather than causally.

Contrasted, however, with the historical and normative groups of sciences, and the fine arts including literature, as purposive in their outlook and interpretative in their aim, are the distinctly causal and explanatory sciences of the social and linguistic groups. There can be no doubt that the point of view, methods, and aims of such sciences as sociology, economics, and politics, philology, grammar and rhetoric are the same as those of psychology and the physical sciences. When we say that psychology is the central mental science, then, it is with reference to the above groups that we speak; just as when we say that physics and chemistry are the central physical sciences, we are referring to their relation to astronomy, geology, biology, and the rest.

69. *The Classification of the Sciences.*—We have now replied to the first of the two inquiries propounded in the opening paragraph of the preceding section, but what of the second question? Are the so-called "sciences" of the historical and normative groups really sciences at all? The apparent confusion is due to the ambiguous use in our language of the term "science." In its broadest and historic sense the term includes all systems of knowledge, whether of the causal or the purposive type: in the stricter and more technical sense, however, it is limited to knowledge systems of the causal type, and it is in this latter significance that we have above (50-56) discussed the problems, aims, and methods, of science as opposed to those of metaphysics. We may avoid all ambiguity by speaking of the mechanistic or causal or positive sciences when referring to the narrower group.

In the light of what has been said we may approach the age-old problem of the classification of the sciences, in which expression the broader meaning of the term "science" is always connoted. In making our classification we are concerned only with the larger groups, and need not consider

the place of every individual science in the general scheme, since our immediate purpose is merely to discover the place which psychology and the other so-called "mental sciences" of the preceding section occupy therein.

The main division will be between the sciences strictly so-called, in accordance with our analysis in the early pages of the present chapter—*i.e.,* the *mechanistic* or causal sciences, whose problems are description and explanation; and the *teleological* or purposive sciences, whose problems are appreciation and interpretation. The mechanistic sciences will include in their turn the two great groups of the material and the mental sciences, the latter being further specialized into psychology and the linguistic and social sciences, in all of which the *aim* is a mechanistic one and the *methods* causal rather than purposive. The teleological disciplines will include the historical and the philosophical sciences, distinguished by virtue of the fact that the former (like the fine arts) are interested in *individuals,* either singly (biography) or in groups (history), whereas philosophy has to do with *universals* (reality, and the "norms" of thought, feeling, etc.).

TABLE VI

The Classification of the Sciences

I. THE MECHANISTIC SCIENCES. (Causal point of view. Problems: Description and Explanation.)
- A. *Material Sciences:* Physics, Chemistry; Astronomy, Geology; Biology, etc.
- B. *Mental Sciences*—
  1. Psychology.
  2. Linguistic Sciences: Philology, Grammar, Rhetoric.
  3. Social Sciences: Sociology, Economics, Politics.

II. THE TELEOLOGICAL SCIENCES. (Purposive point of view. Problems: Interpretation and Appreciation.)
- A. *Historical Sciences* (Individuals).
  1. History } "Psychognosis."
  2. Biography }
- B. *Philosophical Sciences* (Universals).
  1. Metaphysics (including Rational Psychology or "Psychosophy").
  2. Epistemology.
  3. The Normative Sciences: Logic, Ethics, Aesthetics.

70. *Psychology and Religion.*—Most important is it in closing this part of our subject to keep clearly in mind the independence of psychology and religion. By this expression I mean to emphasize the point that the results of scientific investigation into the inner activities of the human mind can never have any effect one way or the other in determining the truth or validity of those experiences of the human mind which seem to give evidence of a personal relationship between man and God. The determination of this latter point is distinctly an epistemological or philosophical problem, not a scientific one. Psychology may discuss as freely the mental processes involved in religious experience as it does those concerned in our experience of physical things, but in neither case do its decisions affect in either direction the question of the meaning, validity, or truthfulness of those experiences. The question of the nature of the processes undergone by the human mind in any spheres of activity is a question of *fact*, calling for analytical description and explanation in causal terms: the problem of the validity or truth-value of these processes is a question of *meaning*, calling for interpretation and appreciation.

William James, in his wonderful chapter on "Religion and Neurology" in his *Varieties of Religious Experience*, has put to scorn forever those who maintain that "an existential account of the facts of mental history" can "decide in one way or another upon their spiritual significance,"[51] and insists that the latter "can only be ascertained by spiritual judgments based on our own immediate feeling primarily; and secondarily on what we can ascertain of their experimental relations to our moral needs and to the rest of what we hold as true. *Immediate luminousness*, in short, *philosophical reasonableness*, and *moral helpfulness* are the only available criteria."[52]

As literature, music, and the other fine arts are allied with

[51] P. 14.

[52] P. 18. Italics the author's.

the historical sciences in their teleological view of human behavior, so religion is allied with the philosophical sciences for the same reason. The former together constitute the "psychognostic" view of man, the latter the "psychosophic" view of him, to follow out Dessoir's analysis (68).

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CHAPTER V

Psychology and the Material Sciences

1. *Theories of their Differentiation.*

71. *The Problem.*—We have now marked off the field of psychology from that of metaphysics and of the other mental sciences. It remains to us in the present chapter to determine the essential distinction between psychology and the sciences which have to do with material things.

Wundt describes for us two theories as to the nature of this distinction—the Inner Sense theory, as we may call the first of these, and the Immediate Experience theory.[1] We shall consider these in turn.

72. *The Inner Sense Theory.*—According to this, the traditional view of the relationship between psychology and the non-mental sciences, the distinction is primarily one of "sphere" or *subject-matter.* Experience is distinguished into two "spheres"—called "outer" and "inner" experience, respectively —the former being the sphere of the material sciences, the latter of psychology. The methods of investigation in these two fields also are thought of as correspondingly different, the data of the material sciences being derived through sense-perception (the "outer senses"), and the data of psychology through introspection (the "inner sense," as it was called).[2]

The distinction may be traced back historically to the ancient and mediaeval periods of philosophy, during which the phenomena of sensation and perception were commonly referred to the "outer sense," and the phenomena of ideation (memory,

[1] *Outlines of Psychology,* translated by Chas. Hubbard Judd, §1; and § 2, Nos. 3 and 4. Pp. 1-6, 8-11. (Page references are to the Third Revised English Edition, 1907.)

[2] *V.* Wundt, *Outlines of Psychology,* pp. 8 f. Klemm, *History of Psychology,* pp. 69 ff.

imagination, and thought) to the "inner sense." Such a view, is, of course, merely one phase of the faculty theory of the mind.

Beginning with *Locke* (1632-1704) the more modern conception of the "inner" and "outer" senses appears, according to which each of these represents a source of experience quite independent of the other. The line of demarcation is no longer, as under the older theory, between sense-perception as "outer" and ideation as "inner," but between all physical phenomena as objects of outer sense alone and all mental phenomena as objects of inner sense alone. In Locke's own terminology, the sources of all knowledge are two—(1) *sensation,* or "outer perception" (*i.e.,* the physical sense-organs, to interpret his doctrine in modern terms), which gives us our knowledge of the material world; and (2) *reflection,* or "inner perception" (what we today call "introspection"), which gives us quite independently a knowledge of the workings of our own minds. Reflection always, according to Locke, presupposes sensation, and in both of them the mind is merely passive; and yet Locke insists that reflection is an entirely independent source of experience from sensation. The following table may make this distinction and relationship clearer:

Locke's Theory of the Sources of Knowledge

Experience	*Sources*	*Objects*	*Sciences*
Outer	Sensation (Physical Senses)	Material World	Material Sciences
Inner	Reflection (Introspection)	Mental Processes	Psychology

Psychology, then, according to this general doctrine, is the science of inner experience, having for its subject-matter the phenomena of the inner sense: the material sciences are sciences of outer experience having for their subject-matter the phenomena of the outer sense. The distinction is a perfectly simple one, and, if simplicity were the only criterion of truth, an acceptable one; but as a matter of fact it will not hold when viewed in the light of modern criticism. This criticism includes three principal points.

In the first place, there is the objection that the inner sense

theory involves a *false dualism* between the two sources of knowledge. Modern psychology refuses to admit any such sharp divisions of organs of knowledge or of spheres of experience. Experience is one, and the difference between "inner" and "outer" merely a distinction in point of view."[3]

In the second place, the field of psychology is really *inclusive* of that of the material sciences, and even more extensive than the latter. It is true that there are some contents of experience which are open to investigation by psychological methods alone—the world of ideas, memories, feelings, etc.; but, on the other hand, any physical phenomenon may become an object of psychological investigation also. Sensations, in other words, are both mental and material objects. "A stone, a plant, a tone, a ray of light, are, when tested as natural phenomena, objects of mineralogy, botany, physics, etc. In so far, however, as they are at the same time *ideas* [sensations], they are objects of psychology. . . . There is, then, no such thing as an 'inner sense' which can be regarded as an organ of introspection, and so distinct from the outer senses, or organs of objective perception."[4]

Finally, it is well to point out that the inner sense view of psychology inevitably gives rise to the necessity of showing the relation between the two kinds of experience and the two organs of knowledge assumed, and to do this is to call in *metaphysical* and *epistemological* presuppositions and hypotheses to the detriment of the purely scientific interests of psychology.[5] On all these grounds the subject-matter distinction between psychology and the natural sciences must be rejected.

73. *The Immediate Experience Theory* of psychology in its relation to the material sciences, defended by Wundt, makes the distinction between them one of *point of view* rather than of subject-matter. It "recognizes no real difference between outer and inner experience, but finds the distinction only in

[3] Klemm, *History of Psychology*, p. 71.
[4] Wundt, *Outlines of Psychology*, p. 2. *Cf.* sect. 31, *sup.*
[5] *Ibid.*, pp. 9 f.

the different points of view from which unitary experience is considered in the two cases."[6] There are no longer two distinct fields of experience, but one experience which may be studied in either of two ways.

Wundt explains the basis of the distinction by reference to the two factors involved in every concrete experience, namely, (1) a *content* objectively presented to the mind—and (2) a *subject* ("mind") to whom this content is presented—in brief, an experienced object and an experienced subject. Every concrete experience involves these two factors—that I as subject apprehend or experience some content objectively presented to me.

Now, according to the theory of immediate experience, the *natural sciences* "concern themselves with the *objects* of experience, thought of as independent of the subject," whereas *psychology* "investigates the whole content of experience in its relations to the subject."[7] The distinction is, therefore, entirely one of point of view. "The point of view of natural science may be designated as that of *mediate experience,* since it is possible only after abstracting from the subjective factor present in all experience; the point of view of psychology, on the other hand, may be designated as that of *immediate experience,* since it purposely does away with this abstraction."[7]

By "immediate" experience, therefore, Wundt means practically experience "just as it comes," the total "content" in its relation to the experiencing subject; by "mediate" experience he means the purely objective factor, the objects of experience thought of as independent of the subject experiencing them. Psychology and the natural sciences may, according to this theory, and in conformity with the considerations brought forward in the preceding section, investigate precisely the same objects, the former from the "immediate" and the latter from the "mediate" point of view. Thus we may have on the one hand, *physical* experiments on light, sound, weight, etc., and

[6] Wundt, *Outlines of Psychology,* p. 9.
[7] *Ibid.,* p. 3.

on the other hand *psychological* experiments on sight, hearing, weight-discrimination, etc.: in the former of these we are abstracting the objective factor and rejecting the subjective, studying the objects as they may exist independently of ourselves; and in the latter we are taking experience just as it comes to us, and without abstracting or rejecting any factor:

PSYCHOLOGY (Science of "Immediate Experience") { Experience { Subjective Factor; Objective Factor } } MATERIAL SCIENCES, (of "Mediate Experience")

For this view of our problem Wundt claims two advantages especially[8]—(1) that it allows for the use of the same well-tested *scientific methods* in the study of both mental and material things; (2) that "from this point of view, the *metaphysical* question of the relation between psychical and physical objects disappears entirely," since these are no longer considered as "different objects at all, but one and the same content of experience," viewed now "after abstracting from the subject," and now in "its complete relation to the subject. All metaphysical hypotheses as to the relation of psychical and physical objects are, when viewed from this position, attempts to solve a problem which never would have existed if the case had been correctly stated," and so may be dispensed with altogether.

74. *Criticism and Conclusions.*—Now, as between these two theories the school of Immediate Experience is undoubtedly right in overruling its opponent's division of the mind into two different organs and of experience into two separate spheres, and in making the distinction between psychology and the material sciences one purely of point of view. But if our contentions in the last chapter regarding the nature of science in general are worthy of support, a further point of the Immediate Experience theory is open to objection—

[8] *Op. cit.*, pp. 10 f.

namely, the assertion of Wundt that psychology is a *concrete* science and that the natural sciences are by contrast *abstract.*[9]

The natural sciences do, as Wundt contends, abstract the *objective* factor of experience and disregard the subjective, but is it not just as true that psychology abstracts the *subjective* factor and disregards the objective?—at least, if by objective we mean, "that which is independent of the experiencing subject." To apply Wundt's own illustration (p. 2), the natural sciences are interested in stones, plants, tones, rays of light, etc., as objects which exist whether anyone observes them or not: as such, these sciences are abstract in their treatment of these objects, because they disregard the subjective factor which is involved when someone *does* observe them. On the other hand, psychology is interested in these same objects only so far as they are parts of the experience of some individual subject, and disregards all phenomena which take place in connection with those objects when someone *does not* observe them. Psychology, for this reason, is just as "abstract" in its point of view as the material sciences, but the two groups of sciences are abstract in different directions.

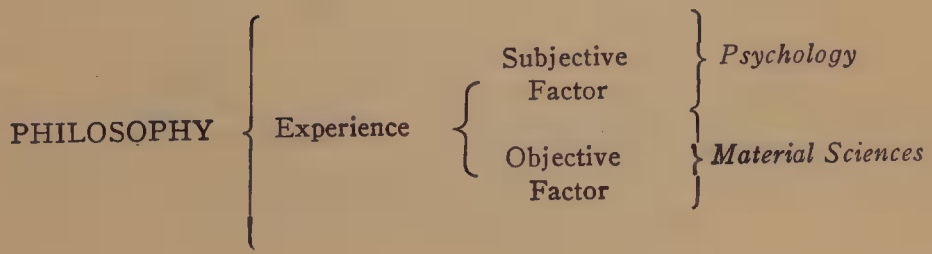
All sciences, then, are, by their very nature *as* sciences, abstract in their point of view and artificial in their methods, and only *Philosophy* is absolutely and thoroughly *concrete.* Philosophy and science are alike empirical, in that they are all studies of experience; but whereas psychology abstracts the subjective factor of experience and the natural sciences the objective factor, philosophy, and philosophy alone, studies experience as a concrete whole. This conclusion is symbolized in a table which will be found at the bottom of page 131, and which should for purposes of contrast be compared with the table symbolizing Wundt's theory in the preceding section.

But though the conclusion above set forth may be said to afford a satisfactory explanation of the relation between psychology and the natural sciences so far as they have to do with

[9] *Outlines of Psychology,* pp. 3-5 (Nos. 3 and 3a).

the same objects, it is defective in that it does not allow for that large group of contents of experience referred to above (72) which we especially associate with psychology, and which cannot become objects of investigation by the material sciences at all—I mean, the so-called "world of ideas," of memories, feelings, desires, etc. So far the problem has been, "How do psychology and the material sciences differ in their respective studies of those *physical things* which are also possible contents of experience?" The problem now becomes, "What is there about *ideas and* things which make both of them contents of experience, and objects of psychological investigation, and removes the former entirely from investigation from the natural sciences without also removing the latter?" We seem to have *three* kinds of objects instead of two—(1) "things" as objects of investigation by the natural sciences, (2) "things" as objects of investigation by psychology, and (3) "ideas" as objects of investigation by psychology alone. Our previous discussion has taken care of the relation between the first two of these groups. What are we to say about the second and third groups in their relation to the first?

Now we have a name for those things which are "objects of investigation by psychology": we call them "mental contents" or "mental facts," and distinguish them from the "material facts" (group 1, above) which the natural sciences study. All sciences, we say, have to do with facts, but there are two great groups of facts—mental facts, which psychology studies, and material facts, which are investigated by the natural sciences: our next task is to differentiate clearly between these two great groups of facts.



2. The Differentiation of Mental from Material Facts.

75. *The Non-Spatial Character of Mental Objects.*—The most obvious distinction characteristic of mental objects is a purely *negative* one—namely, their *non-spatial* character. A comparison of mental objects with physical shows them to possess a variety of attributes in common—as quality, intensity, number, and the temporal or time attributes of duration, coexistence, succession, etc.; but the spatial or space attributes which physical objects also possess—extension, weight, inertia, motion, position, etc.—are entirely inapplicable in the realm of mental phenomena. Ideas and feelings may be strong or weak, few or many, brief or of long duration, simultaneous or successive, just as physical things or events may be; but we cannot think of an idea as measuring so many cubic inches, weighing so many pounds, or moving from one place to another. "To realize this truth," says Dr. Sidis, "I think it a good preliminary psychological exercise for the reader to try to find how many grams or grains his idea of beauty weighs, how many millimeters long, wide, and high his feelings of love are; let him indulge in the fancy of conceiving an engineer building a bridge with mathematical formulae as links, and his feelings of virtue and patriotism as supports."[10]

But though the distinction is a simple one to grasp in its main outlines, it is extremely difficult to comprehend in its full significance. One may freely admit the truth of the statement that mental objects do not exist in space and have no space characteristics, but when we come to apply this truth in specific instances we find it to be by no means easy to do so. Our interests are ordinarily so wrapped up in material things, our very language so permeated with spatial terminology and figures of speech, and our mental life itself so dependent on material sense-data and imagery, that it is quite inevitable that we should constantly fall into materialistic ways of thinking when we make our mental processes themselves our objects of study. How natural it is to speak and think of the

[10] *The Foundation of Normal and Abnormal Psychology*, p. 19.

mind as "in the brain," or "in the head" just as the brain is "in the head"; or even to go so far as to *identify* mental processes with brain processes. The average person makes no distinction whatever between an animal's or a man's "mind" and that same animal's or man's "brains," to employ the common pluralization of the latter term; and this confusion is supported rather than cleared away by the too prevalent tendency among physiologists and others to identify mental with cerebral processes. And yet the tendency is altogether a fallacious one. As Dr. Sidis says again, "psychic life is no doubt the *concomitant* of nervous brain activity, and certain psychic processes may depend on definite local brain processes; but the given psychic process is not *situated* in a definite brain centre, nor for that matter is it situated anywhere in space."[11] It would be just as true, and just as false, for me to say, if I am thinking of a mountain in Japan, that my mind is in Japan, as to say that my mind is in my brain: as a matter of fact it is not, in the usual local significance of that preposition, *in* either place. The mind may be "in" the brain in the sense that the harmony is "in" the musical chord, or that the artist's soul is "in" his painting; but this does not involve any spatial relation between the one or the other in any case, but only a functional relation.

And as it is with the attribute of location or position, so also is it as regards the attributes of size, weight, shape, etc. Although it is by no means so common to think of the mind as having a size, shape, or weight as it is to think of it as located in the brain or in the head, there is a common popular error which amounts in the end to the same spatializing of the mind as that which we have already observed and condemned. Ask the average man who asserts that his mind is located in his brain how large or how heavy he thinks his mind to be, or whether it is spherical, cubical, conical, or what not, in shape; and he will probably admit the inappropriateness of the question, though as a matter of fact such a ques-

[11] *Op. cit.*, pp. 24 f. Italics mine.

tion is no more inappropriate than the question of location. But press him further as to what he means by denying size, weight, and shape to his mind, it is quite possible that he may reply that the mind is too small and too light to be measured or weighed, or may imply in his answer that such is his real view of the matter. But to reduce the size and weight of the mind to a minimum does not deprive it of spatiality altogether, and it is only by refusing to apply spatial notions to the mind at all that we can satisfy the demands of our negative conception.

76. *Consciousness as Potential Energy.*—Obvious as the above considered distinction between mental and physical facts seems to be, there are some who would deny its validity and insist that mental phenomena like physical ones have spatial attributes. Among these is Professor W. P. Montague, whose doctrine that consciousness is a form of potential physical energy I shall briefly consider in the present section.[12]

In the first place, Professor Montague seeks to justify the plain man's belief that his consciousness is located in his head on the ground that in so believing he is merely applying to the series of mental processes "a rule which has always proved valid for the location of every other series of events"—namely, that "every invisible thing is in the same place as the visible thing which varies directly and immediately with it." For example, "electricity, though in itself invisible, is located in the battery and wires on which it is found to depend"; gravitation is located in the masses which it seems to hold together, and in the space between them; etc. With equal right, says Professor Montague, "we locate the invisible mental processes of other persons in their visible bodies because . . . they vary directly and immediately with . . . the central nervous system of their owner."[13]

This inference of the "plain man" is, of course, based on

[12] *The Monist,* XVIII, pp. 21 ff. (1908). Also, in "Essays Philosophical and Psychological in Honor of William James," same year, pp. 105 ff.

[13] *Monist* article, p. 22.

an identification of functional relationship with location. If two things vary together, we *do* naturally infer that there is some logical connection between them, but to infer their *location* one within the other *on this ground alone* is surely to advance beyond the evidence. And to extend an inference, which may be justified as regards the mutual relations of things recognized to be physical, beyond the physical to include the mutual relations of things and mental processes, is still more unwarranted. We have no right, then, to infer that the mind is located in the brain merely because mental and cerebral processes vary concomitantly; and this negative conclusion receives positive confirmation when we pass to the second point of Professor Montague's doctrine.

This second point is that though mental processes have location, they do not all (though some do) have size and shape. Objectors, he says,[14] erroneously assume that to locate mental processes in space would be to attribute size and shape to them, but this is true only so far as visual and tactual experiences are concerned. Pains, odors, sounds, etc., are located in space, though they have no size or shape. "It is only with color, and to a less extent with solidity, that spatiality [size] and figure [shape] are indissolubly associated."

But in this argument Professor Montague is at the same time confusing mental experience with the physical objects of that experience, and also drawing an invalid antithesis between two groups of sensory experience. So far as pains, odors, sounds, etc., are qualities of physical things—our bodies, flowers, organ pipes, etc.—they *do* have size and shape as well as location. As sensations, however, in my mind, as parts of my mental experience, these pains, odors, and sounds have neither size, shape, nor location; but precisely the same things are true of colors and solids—as physical objects and qualities they have all these spatial attributes, as sensations or mental experiences they have none of them. The only valid basis of distinction between the two groups of sensory ex-

[14] *Op. cit.*, p. 23.

periences is the fact that visual and tactual experiences alone seem to give us our *direct* knowledge of space and its attributes, and that whatever knowledge of space we *may* have through smell, sound, and the other sensations seems to be indirect and indistinct; but that the experiences themselves are non-spatial and the objects of those experiences spatial is true of both groups of sensations.

Professor Montague sums up these first two points of his argument in the statement that consciousness occupies space *intensively*—"as the force of gravity between two planets, or the stress in a watch spring"—rather than extensively. Consequently, and this is his third and constructive suggestion, consciousness is not a form of matter but of energy, and, more specifically, of *potential* energy. This accounts for the fact that mental processes cannot be perceived by an external observer. "Objects, in order to be perceived by us, must impress our sense organs with some kind of *kinetic* energy. Kinetic energy is a public fact, externally accessible to many observers; but *potential* energy, which is admitted to be in space, can only be externally perceived by passing into a kinetic state—that is, by ceasing to be itself. To feel it as it is, we must participate in it. To perceive a stress, our muscles must undergo stress; just as to perceive a pain or pleasure, we must be pained or pleased."[15]

Consciousness, therefore, is identified by Montague with potential energy, though not with *all* potential energy, but only with *some*—namely, the potential energy of brain currents.[16] It is a *form* of potential energy—that form which is found in

[15] *Monist* article, p. 25 and note. Italics mine.

[16] R. McDougall, however, thinks that the potential energy theory of consciousness involves the notion that "wherever latent energy appears, consciousness must be posited. It is thus," he adds, "made a characteristic not of nervous matter or of living substance, but of all grades of material organization, and may appear equally [*i.e.*, with equal reality] in a stone and in a man"; though probably in different degrees of complexity in the various cases. (*American Journal of Psychology*, XXV, p. 491. 1914.)

the nerve currents of the brain. The briefest comparison, however, of the results of introspection with those of neurological investigation shows at once that mental processes and neural processes are *not* identical in themselves, even should they have an identical source. In fact Professor Montague himself gives away his entire point when he says: "what we know *directly from within* as the psychical or subjective side of experience may be the same as what we know *indirectly from without* as the potential energy of the nerve-currents of the brain."[17] And again, in another article published the same year: "what I, *from within,* would call my sensations are neither more nor less than what you, *from without,* would describe as the forms of potential energy to which the kinetic energies of neural stimuli would necessarily give rise in passing through my brain."[18] Here we have a distinction of aspects, which destroys the absolute identity of consciousness and potential energy, and admits all that the advocate of the non-spatial character of mental processes could desire. Consciousness *may* be *correlated* with the potential energy of the brain, may be the *subjective aspect* of the latter, but *cannot* be *identified* with it. This is what is known in philosophy as the "double aspect theory" of the relation between the mental and the physical,[19] and is practically the position which we shall adopt at the close of the present discussion (80); but to say that consciousness is the subjective aspect of the potential energy of the brain is *not* to say that "consciousness is *in* the brain" in the local or spatial sense, but merely that consciousness is functionally related to the potential energy which *is* in the brain.

We adhere, then, to our first characterization of mental facts

[17] *Monist* article, p. 27. Italics mine.

[18] *Essays Philosophical and Psychological in Honor of William James,* p. 128. Whole passage is in italics in original.

[19] *Cf.* Warren, *Psychological Review,* XXI, pp. 79 ff. (1914). Especially, p. 83: "if Professor Montague regards consciousness as the *inner aspect* of potential energy, then he merely adds a limiting clause to the double aspect theory."

as non-spatial. This is a merely *negative* definition, however: it tells us what mental facts *are not,* but not what they *are.* The essential *positive* characteristic of mental facts is their *privacy,* to the discussion of which we shall now turn.

77. *The Privacy of Mental Facts* vs. *the Community of Material Facts.*—The essential characteristic of *physical* or material facts is that they are *common* objects of experience for all experiencers: the essential characteristic of *psychical* or mental facts is that they are *private* objects of experience for one experiencer only. Physical facts are by their very nature facts which may be experienced by any number of experiencers together: mental facts are by their very nature facts which may be experienced by only one experimenter. This is the distinction between mental and physical that meets with the approval of the greatest number of modern investigators of the problem—such psychologists, for example, as Münsterberg, Royce, Calkins, Titchener, Stout, etc. I shall quote at length from the writings of two of these.

When we examine, says Professor Calkins, the contrast between the so-called "inner phenomena" of perception, feeling, memory, etc., and the things and events of the so-called "outside world," "we find two reasons for it. In the first place, the inner facts—the memories, emotions, and all the rest—are realized as private, unshared experiences belonging to me alone; whereas the things or events are public, shared facts, common property, as it were. My fear or delight is my own private experience; and so, for that matter, is my perception, for I have my own particular way of looking at everything, which I share with no one else. But the beast who frightens me, the spring day which delights me, the sunset of which I have my own particular perception—all these are public facts shared with an unlimited number of other selves, facts which no longer bear the stamp of my individuality." This is the first and essential distinction, but "close upon [it] follows another. Just because the shared or public facts are not referred to any particular self, they tend to seem independent of

all selves, and to become externalized; whereas the private facts continue to be referred to a self, and in this way, also, are contrasted with events or things which seem to us quite cut off from selves."[20] To this secondary and subsidiary distinction we shall return in the next section.

As Professor Royce has stated it: "By our mental life, as opposed to our physical life, we mean a certain collection of states and of processes with which, from moment to moment, each one of us is, in his own case, very directly and immediately acquainted; while, on the other hand, it is impossible that anyone else besides the original observer, whose mental life this is, should ever get this immediate sort of acquaintance with just this collection of states and processes. Herein, then, lies the essential characteristic of our mental life. Others may learn, from observing our acts and our words, a great deal *about* this, our own mental life, but each one of us is the only being capable of becoming directly aware of his own mental states. On the other hand, however, our physical life, in its external manifestations, may be observed by anyone who gets the opportunity. . . . Thus physical facts are usually conceived as 'public property,' patent to all properly equipped observers. All such observers, according to our customary view, see the *same* physical facts. But psychical facts are essentially 'private property,' existent for one alone."[21]

The objection which may be offered that our inner physiological processes also are "private" and open to our observation alone, and yet are not therefore considered to be mental, is commented on by Royce as follows: "The fact that other observers cannot directly watch our inner physiological processes is itself something relatively *accidental,* dependent upon the limitations of the sense organs, or upon the defective instrumental devices, of those who watch us. But the fact that our mental states are incapable of observation by anybody but ourselves seems to be not accidental, but an *essential* character

[20] *Introduction to Psychology,* p. 6.
[21] *Outlines of Psychology,* pp. 1 f.

of these mental states. Were physiologists better endowed with sense organs and with instruments of exact observation, we can, if we choose, conceive them as, by some unknown device, coming to watch the very molecules of our brains; but we cannot conceive them, in any possible case, as observing from without our pains or our thoughts in the sense in which physical facts are observable."[22]

Several critics have denied the validity of this distinction, which seems so fundamental to those who uphold it, just as the non-spatial theory of mental phenomena is rejected by many. I shall quote from four of these criticisms, commenting upon each of them.

"It is so far from self-evident," says one, "that each man's mental state is his own indisputable possession, that no one hesitates to confess at times that his neighbor has read him better than he has read himself, nor at other times to claim that he knows his neighbor's state of mind more truly than the neighbor himself knows it."[23] Of course, we reply; but this is inference, the "knowledge about" of which Royce speaks above, not direct "knowledge of observation." The very term used (to "read") shows this; for to read, here, means to interpret behavior, not to observe directly. I, only, am *conscious* of my own mental states; but others may *understand* them much better than I do.

Professor Bawden objects[24] that if psychology is "concerned with what is common to many or to all human minds,"[25] and if only that which is physical is "common," then psychology cannot deal with the "psychical" at all. We must, then, either accept Professor Baldwin's distinction between the "psychical" and the "psychological,"[26] or else give a different meaning to

[22] *Outlines of Psychology*, p. 4. Italics mine.

[23] Singer, *Jour. of Philosophy, etc.*, VIII, p. 180 (1911).

[24] *Philosophical Rev.*, XIII, pp. 315-321 (1904).

[25] Royce, *Outline of Psychology*, p. 17.

[26] In his *Development and Evolution* (pp. 4 f.), Professor Baldwin defines the "psychological" as the mental "viewed from the outside"—*i.e.*,

the former. But though the Baldwin terminology has its undoubted uses, it is quite unnecessary to press it into service in this connection; and Professor Bawden's objection is obviously grounded in an ambiguous interpretation of the word "common." Mental facts may be "private" or "not-common" objects so far as *observation* is concerned, and yet the facts *about* mental life may be "common" to all normal minds; just as what is in the usual sense "my property" (money, land, etc.) is most certainly not "common property," although there are laws which apply to all "private property," and so are "common" principles governing "private property" in general. Psychology, then, has to do with the "common" principles of that "private" thing which we call mental life.

But the most complete and searching criticism of the privacy theory of mental contents is that of Professor Perry.[27] "It is characteristic of content of mind, such as perceptions and ideas, to belong to individual minds," he admits. "My idea is mine; and in some sense, then, falls within my mind. . . . *But it does not follow,*" he insists, *"that my idea may not also be your idea.* . . . It will doubtless remain true that my idea simply, and your idea of my idea, will differ through the accession of the last cognitive relationship;[28] and that in this sense my idea cannot be completely *identical*[29] with your idea. But it is impossible even to state this trivial proposition without granting that you may *know*[29] my idea, which is the point at issue."[30]

Is this, however, the *true* "point at issue"? Certainly, no one can deny the "trivial proposition" and its underlying assumption referred to. All would cheerfully agree that my

objectively, as that which is common to all minds; and the "psychical" as the mental as experienced by some individual mind—*i.e.*, as subjective. This difficulty will be returned to in Division 3 of the present chapter.

[27] *Present Philosophical Tendencies,* pp. 286-298.

[28] That is to say, "will differ by virtue of the fact that 'my idea' is mine and 'your idea of my idea' yours."

[29] Italics mine.

[30] *Op. cit.*, pp. 286 f.

idea may in some perfectly valid sense be the *same* as your idea, but are they by that fact one *identical* idea? That is the real point at issue: can one identical idea be in two different minds? To this question, Professor Perry practically admits the negative reply which we also are defending. The essence of an "idea," as we see it, is that it can *be* only in one mind; but one mind may certainly *know* an idea in another mind—whether directly or indirectly (*v.* Perry's p. 290) is indifferent.

The essence of the doctrine we are defending, in its relation to Professor Perry's criticism, is stated by Professor Rogers, in a reply to Perry, as follows: "I can say plausibly that my idea, and my neighbor's idea which it knows, are the 'same' idea, because usually in such a statement I am concerned with *content,* and not with psychological *existence*"—or, as I should rather put it, "because in such a statement I am concerned with *meaning,* and not with psychological *content.*" "But it is not so plausible to affirm that my idea of his emotion, and the emotion itself, are the same. And it is of course on the side of existence that the imperviousness of minds is intended to be understood."[31]

Compare also the following words of Münsterberg: "The star which I see is conceived as the same star which you see." But "my visual impression of the star, that is, my optical perception, is a content of my own consciousness only, and your impression of the star can be a content of your consciousness only. We both may *mean* the same by our ideas, but I can never have your perception and you can never have my perception. My ideas are enclosed in my mind. I may awaken in your mind ideas which have the same *purpose* and *meaning,* but they are new copies in your mind. We both may be angry, but your anger can never be my anger, and your volitions can never enter my mind."[32]

This, then, in brief, is our position: as *psychological content* or "existence," ideas in two different minds are by that

[31] *Jour. of Philosophy,* etc., XIII, pp. 169 ff. (1916).
[32] *Psychotherapy,* pp. 18 f. Italics mine.

very fact two ideas, though in their *logical meaning* they may be the same idea.

78. *Sidis's Doctrine of Mental* vs. *Physical.*—Dr. Sidis substitutes for the prevailing Privacy-Community distinction between mental and physical facts a distinction of Internality *vs.* Externality.[33] Physical facts, he says, are (1) *external* and (2) *independent of consciousness:* mental facts are (1) *internal* and (2) *dependent on consciousness.* Of these, the first is taken as the primary distinction, and the other is added at the close of his chapter on the subject as further definitive of the primary distinction.

"Psychologically considered, the characteristic trait of a physical object is not that it is *common,* but that it is *external,*" we are told. "The tree yonder is to me a physical object, not because it is common to many minds, but because I *perceive* it as external, the sensory elements of the perception carry with them external objectivity."[34] "It is true that community of object is one of the criteria of external reality, but it is certainly not true that the community of the object gives rise to the perception of externality. It may, on the contrary, be claimed, and possibly with far greater reason, that it is the object's externality that gives rise to its community."[35] In other words, *the physical universe, genetically regarded, is external not because it is common, but it is common because it is external."*[36] *Externality* is the original criterion: *community,* the derived criterion.

Criticism of this position involves three points: (1) the *genetic* question raised by Sidis, as to whether community or externality is the original subjective or mental criterion of objective or physical reality; (2) the question of *fact,* as to whether externality is *per se* a sufficient psychological criterion of the physical; and (3) the question of *definition,* as

[33] *Foundations of Normal and Abnormal Psychology,* Chap. III.
[34] *Op. cit.,* p. 26.
[35] *Op. cit.,* p. 27.
[36] *Op. cit.,* pp. 28 f.

to whether the internality-externality distinction is a logically defensible one.

The first question is not an important one for our discussion, and the evidence, it must be admitted, is largely on his side. Perception does undoubtedly carry with it, normally speaking, a vague something which may be called for want of a better term an original (*i.e.*, underived) mark of "externality"; while imagination—normally speaking, again—lacks both these marks. But in the case of an illusion or hallucination, there may be a very vivid feeling of "externality," notwithstanding the fact that an illusion is largely and an hallucination wholly mental.

Dr. Sidis himself is rather inconsistent on this point. In Chapter III he writes as follows: "Had my perception of the house yonder been a hallucination, I would have still seen it as external and therefore regarded [it] as a physical object."[37] But this statement involves an admission that gives away his entire point. I might indeed, in the case cited, *"regard"* the hallucinatory house as physical, but it would *be psychical,* just the same. This view is somewhat modified for the better in a later chapter in which the whole question of externality is under discussion.[38] "Psychologically regarded," it is there asserted, "the *percept* is as much a *private* experience as the *image* is. In fact, every psychic state has the privacy ascribed to the image, and as such is unshared by other selves."[39] Here we have the commonly approved "privacy" or "unshared"-ness criterion of the psychical for which we have been arguing. *All* psychic states, percepts as well as images, are private and unshared; but percepts have *reference to* physical (*i.e.*, public or common) objects, while images do not, and it is this "reference to" the physical which gives the former their mark of "externality."

The various questions thus aroused by the doctrine of the

[37] *Foundations of Normal and Abnormal Psychology,* p. 27.
[38] Chap. XXIV.
[39] P. 172. Italics mine.

externality of the physical seem to leave that doctrine in an unenviable position of vagueness. Percepts *do* carry with them a feeling of externality, but so also do hallucinations: externality, therefore, is not a *sufficient* criterion of the physical. Even if the internal-external distinction, then, be, as it probably is, the first distinction to be made between the mental and physical reality, its inadequacy soon forces us into a search for a truer one; and in the privacy-community theory our problem seems to find its best solution.

It should also be noted, in answer to our third question propounded above,[40] that there is also a serious *logical* objection to Dr. Sidis's doctrine—namely, that the internal-external distinction is in its very terminology *spatial,* and so contradicts the spatial vs. non-spatial distinction between the physical and the psychical formulated in an earlier section (75). Dr. Sidis draws a line *in space* between the mental as "internal" (*i.e.*, "within" something, presumably mind or brain) and the physical as "external" (*i.e.*, "outside" the mind or brain)—a procedure which is vitiated throughout by its attribution of spatial terminology to that which is in its essential nature non-spatial.

Before leaving Dr. Sidis, we must say a word or two about his second distinction between the mental and the physical referred to above. "I think it is best," he says, "to define the physical phenomenon as *the object or process conceived as being independent of consciousness,* while the psychic object or process is *one that is conceived as being directly dependent on consciousness.*"[41] These definitions, however, do not, it is to be feared, throw any light upon, or add anything to, the definition of the mental as internal and the material as external: rather do they beg the very question at issue, namely, what is it that characterizes dependence upon consciousness and independence of consciousness respectively?

Our criticism of Sidis's doctrine, then, is threefold: (1) that the *internal-external* distinction is a *spatial one,* and so

[40] P. 143.
[41] P. 30.

ruled out by our previous characterization of the mental as non-spatial; (2) that the *conscious dependence-independence* distinction *begs the question* at issue; and (3) that both these distinctions are, as Miss Calkins treats them (*v.* previous section, 77), *subsidiary* to the privacy-community distinction, and *logically inadequate* until explained in terms of the latter.[42] The internal-external distinction may be *genetically prior,* in the history of the individual consciousness, to the private-public distinction; but it is *logically based upon* the latter. Things may first *seem external* and only then be explained as common or public, but it is the latter fact which makes the former true. Or, once more, and making use of an ancient philosophical expression: externality is the *ratio cognoscendi* of community, but community is the *ratio essendi* of externality.

79. *Various Secondary Characteristics of Mental Phenomena.*—We have now established the two primary distinctive characteristics, one negative and one positive, of mental phenomena. There are a number of other secondary characteristics, however, which it is desirable to note. William James has summed these up in his *Principles of Psychology* under the expression, "the five characters of thought."[43] These "five characters" are:

"1) Every thought tends to be part of a personal consciousness.

2) Within each personal consciousness, thought is always changing.

3) Within each personal consciousness, thought is sensibly continuous.

4) It always appears to deal with objects independent of itself.

5) It is interested in some parts of these objects to the exclusion of others, and welcomes or rejects—*chooses* from among them, in a word—all the while."

In his later abridgment of his great work, known as the

[42] *V.* also next section for further dscussion of this characteristic.

[43] *Op. cit.,* Vol. I, Chap. IX. The summary quoted is on p. 225.

Briefer Psychology,[44] James alters his terminology somewhat, and reduces his "five characters" to four by the omission of No. 4 of the original list. By "thought," it should be said, he means what we have called "content," or, as he puts it in his second list, mental "states." The fifth character is the fact of interest or attention, and though a basic mental activity, it is specific rather than general, and may be disregarded by us in this connection. The fourth proposition asserts the close concern which consciousness has with things beyond itself, the intimate relation of the mental with the physical; but was wisely omitted in the revision in the *Briefer Psychology,* and may wisely also be disregarded by us here. Omitting these leaves us with three *secondary characteristics of the psychical* which will occupy our attention in the ensuing paragraphs—Introspectiveness, Transitoriness, and Continuity, as we shall call them.

(1) *Introspectiveness.* James's first proposition asserts in different, and, perhaps, more familiar language, the *private* character of mental phenomena. "Every thought ['state,' 'content'] tends to be [rather, *is*] part of a personal consciousness": that is to say, it is a fundamental truth about psychical as distinguished from physical phenomena that they are personal, intimate, individual, "private," "unshared," parts of a personal "stream," objects of which same "I" is "conscious"—and that apart from such characteristics they can have no existence. This being "part of a personal consciousness" is what Sidis calls the "dependence" of mental facts upon consciousness, and from it follows directly what he designates as the "internality" of mental objects—*i.e.,* as I have put it above, their *introspectiveness.* Psychical phenomena, in other words, are characteristically such as can be experienced only by introspection, not through the physical senses.[45]

(2) *Transitoriness.* "Within each personal consciousness, thought is always changing." In the *physical world* we may

[44] Chap. XI. Summary on p. 152.

[45] *Cf.* Klemm, *History of Psychology,* p. 84.

always distinguish between the *things* in the world, and the *processes* which those things undergo. "Living things," animals and plants, undergo the processes of generation, growth, decay, and death; and science may be interested either in the *structure* of these things (morphology, anatomy), or in their *activities* (physiology, "praxiology"). So manufactured articles—houses, tables, cabinets, machines—undergo the processes of construction, function, and decay, and we separate easily in our minds the structure of the finished product from the processes involved in the making and using of that product. But in the *psychical world* this distinction is in any literal sense invalid: all mental phenomena are of the nature of *processes,* there are no fixed things;[46] and the distinction which we have freely drawn between structural and functional psychology is, as was pointed out when the distinction was under investigation, an artificial one, made for the purpose of a more thorough scientific understanding of mental life, and does not correspond to any real distinction in the mental world.

(3) *Continuity.* Notwithstanding the transitoriness of the individual mental process, personal consciousness ("thought") as a whole is "sensibly continuous." Consciousness "flows": the individual states are not isolated from one another, like the films of a moving picture, but flow into one another, as the films seem to do when projected on to a screen by a cinematograph. Hence comes James's powerful and often used figure of "the stream of consciousness." And even when the stream of consciousness is broken into—as it regularly is by our nightly periods of sleep, and sometimes is in the abnormal disturbances known as periods of amnesia or loss of memory—the personality seems to attach the first moment of waking directly on to the last moment before losing consciousness, so that the gap is filled and the continuity of actual consciousness preserved.

80. *The Interpretation of the Mental-Physical Distinction.* —We have been concerned so far in making the line of sepa-

[46] *Cf.* Titchener, *Primer of Psychology,* pp. 6 f.

ration between mental and physical phenomena as sharp and clear as possible for the purpose of delimiting the field of psychology and dispelling the too prevalent confusion between psychology and the material sciences. We should not wish it thought, however, that in so doing we are desiring to advance any dualistic conception of the relation between the psychical and the material. It is perfectly possible to interpret our distinction dualistically, and it is also perfectly possible to interpret it monistically.[47] The view we have been defending does not necessarily imply two distinct sets of facts, but is completely satisfied by the assertion of two standpoints from which a single fact may be viewed.

Which of these two possible interpretations is to be accepted is entirely a metaphysical question, whereas we are concerned here solely with the question of fact.[48] It may be noted, however, that the Inner Sense theory discussed and refuted above (72) leads most naturally to a dualistic interpretation of the mental-physical distinction; whereas the Immediate Experience theory (73), and the modification thereof which we have adopted (74), as naturally point to a monistic interpretation.

[47] By a *dualistic* interpretation is meant one which would regard mental phenomena and physical phenomena as separate entities or realities: by a *monistic* interpretation is meant one which would regard mental and physical as two aspects of the same phenomenon or reality (4-6).

[48] An interesting monistic interpretation of the relation between mental and physical is the *context theory* of that relationship, or, as it is more commonly called, the relational theory of consciousness. According to this view, the same phenomenon is physical so far as its space context is concerned, and mental so far as it is connected with the context of my own personal past and future experience. For example, the table is physical in its relation to the room and the other furniture therein, and mental in its relation to preceding and succeeding moments of my own experience. See James, *Essays in Radical Empiricism* (especially Chaps. I, II, VIII); *The Meaning of Truth,* Chap. III (especially pp. 46-50); Perry, *Present Philosophical Tendencies,* pp. 306-313. *Cf.* also Montague: "What we know directly from within as the psychical or subjective side of experience may be *the same* as what we know indirectly from without as the potential energy of the nerve currents of the brain" (*Monist,* XVIII, p. 27. Italics mine).

81. *Conclusion.*—In thus completing our inquiry into the nature of mental as distinguished from material phenomena, we have also brought to a solution the problem of the differentiation of the fields of those sciences which take these two sets of phenomena for their respective subject-matter—namely, psychology, and the material sciences. Psychology is the science of mental phenomena as above defined: the material sciences are sciences of material phenomena as also above defined. The fact of the privacy of mental phenomena, however, generates another serious problem—namely, How is it possible (if description involves, as it seems to do, communication of facts from one individual to another) to describe phenomena which can be known directly by only one individual? This question must be answered; for if we cannot describe mental phenomena, a science of psychology is impossible.

3. *Conditions of Psychological Description.*

82. *General Conditions of a Scientific Psychology.*—We have learned (51, 53, etc.) that psychology has for its problem (1) the description of mental phenomena, and (2) the determination of their causal relations. The conditions which make causal explanation in psychology possible will be considered in a later connection,[49] and we shall concern ourselves at this point only with the conditions of a scientific description of mental facts.

83. *Münsterberg's Theory.*—Description involves a communication by the observer to some one else of the facts which he has observed. This is a perfectly simple matter in the physical sciences, because physical facts are common objects of experience to many experiencers; but in psychology, whose objects (*i.e.*, mental facts) are by their very nature private and individual experiences, direct description or communication of facts from one mind to another is impossible. "We cannot communicate a psychical object directly, as it lies in the nature

[49] *V.* especially Chap. VI, Division 3.

of the psychical state to be exclusively the property of one individual." The physical world, on the other hand, "is public property which any two subjects share with each other and about which a direct communication, a common taking hold, is possible. We can therefore communicate a mental state only indirectly, and only insofar as it is necessarily linked with a part of the outer world."[50]

Psychological description, then, is possible only if we can link our mental contents, which in themselves are private and so not directly communicable, with physical facts which by their common or public nature *are* directly communicable. But such a necessary linkage is found only in the case of *percepts,* which refer to existing objects in the physical world, and *ideas,* which are composed of the same elements ("sensations") of which percepts themselves are composed. "The idea means the thing, and any sensation in the idea means a feature of the thing. The tone, the smell, the color as sensation can thus be communicated indirectly by reference to the sounding, smelling, luminous physical object, and any degree of exactness can be reached by the increasingly accurate description of the physical side."[51] Percepts, ideas, and their elements can thus be scientifically, though indirectly, described.

Other mental states, however,—feelings, emotions, volitions, etc.,—are in a different situation. "We understand what we mean by the words fear, or shock, or joy, because we have learned to use the words for those mental states which are connected with special physical occurrences"—their "foregoing causes or following effects." But this is not strictly speaking "a description, because the constitution and the elements of the state are not communicable at all."[52] These mental states (affective and conative) may, then, be described only if they can be reduced to the same elements (*viz.,* "sensations") as those out of which percepts and ideas are composed. "An

[50] Münsterberg, *Psychological Review,* VII, pp. 3 f. (1900).
[51] *Psychology and Life,* p. 50.
[52] *Op. cit.,* p. 49.

emotion or volition is never an idea, but their elements may be the same, just as the organic and inorganic substances in nature are composed of the same chemical elements."[53] Careful analysis, Münsterberg thinks, shows this supposition to be well-founded, and establishes the describability of affective and conative as well as of cognitive contents.

Such is Münsterberg's doctrine of the nature and conditions of psychological description. "The aim of the psychologist is to describe mental facts: he must, therefore, presuppose that all mental facts are describable, and, since only elements of ideas can be described, that every content of consciousness is in reality a combination of sensations."[54] Introspective analysis confirms this presupposition, and guarantees the fulfilment of the ideal of scientific description in psychology.

84. *Criticism of Münsterberg's Doctrine.*—The theory may be stated in the form of the following six propositions: (1) that description involves communication of the facts observed, by the observer to some other mind; (2) that mental as distinguished from physical facts are by their very nature private, and so not directly communicable; (3) that mental facts may be communicated indirectly so far as they may be "necessarily linked with a part of the material world"; (4) that percepts and ideas and their elements ("sensations") can be correlated with physical things, and so described; (5) that emotions and volitions cannot be correlated with physical things, and so cannot be described unless they can be analyzed into the same elements (*viz.*, "sensations") as those of which percepts and ideas are composed; but (6) that emotions and volitions can thus be analyzed into sensations, and consequently can be described.

It is undoubtedly true that the inherently private and incommunicable nature of mental facts offers a serious theoretical difficulty to the scientific description of them, and yet it is equally undeniable that we do as a matter of fact manage to

[53] *Psychology and Life*, p. 51.
[54] *Op. cit.*, p. 53.

describe our inner experiences to one another with a sure confidence that the hearer will understand what we are talking about. How do we do this?

The *medium* of this description is always a *physical* medium —speech, writing, gesture, facial expression, etc.—the describer transforming his mental content into such physical terms as these, and the recipient of the description interpreting those physical expressions into mental terms again. Our knowledge of the contents of other persons' minds, therefore, is ordinarily acquired by the method of *analogy,* through the interpretation of those persons' behavior. But such a procedure does not satisfy the more rigorous and analytical demands of science, and for scientific purposes a more accurate procedure is resorted to—*viz.,* the method of *analysis,* whereby complex mental contents are analyzed into their elements, these being correlated with physical phenomena and so rendered standard media of exchange from mind to mind. The psychologist, then, describes mental phenomena simply by analyzing them into their elements, which elements must have previously been accepted as standards of communication because of their necessary linkage with the common or public objects of the physical world.

So far we follow Münsterberg, our exposition in the preceding paragraph paralleling his first four propositions. But the fifth and sixth propositions suggest two queries—(1) do emotions and volitions really stand on such a different ground from percepts and ideas as Münsterberg insists? and (2) must emotions and volitions, if they are to be described, be analyzable into "sensations only"? Münsterberg tells us that "emotions link themselves with physical causes or effects, and everything in respect to them is dependent upon doubtful observations and interpretations; ideas, on the other hand, stand in a relation to physical things which is anchored in philosophical ground and independent of chance observation."[55] Again, "if there were mental states which are composed of other elements

[55] *Psychology and Life,* p. 50.

than sensations, they would necessarily remain indescribable; we could not grasp them because they would not have any definite relation to the common physical world. We might say, for instance, that our mental content is made up of sensations *and feelings,* but if such feelings were really entirely different from sensations, they would have to remain for all time mysterious and unknown. *We could not compare notes. The feeling which I call joy may feel just like the one which you call despair.*"[56] But "modern psychology has recognized that volitions and emotions and feelings and judgments, and the whole stream of inner life, are made up of sensations,"[57] and the difficulty is therefore overcome.

Now, is this sharp distinction between ideational and non-ideational content in the matter of their relative describability a valid distinction, and is the reduction of emotions and volitions to sensational elements only essential for the overcoming of the difficulty of describing non-ideational contents? The theory of psychical analysis to which Münsterberg subscribes is called "sensationism," the doctrine that all mental contents are analyzable into sensations. The merits of this doctrine we cannot at present discuss: suffice it to say that the majority of psychologists accept also a second type of element—the *affective* element, or the "simple feeling"—and many of them three or more types. For our present purpose we do not need to solve the problem of the existence of affective elements, but merely to inquire whether Münsterberg is correct when he says that if feelings ("affections") were different from sensations we could never communicate them to one another

Now it is certain that I find no more difficulty in practice in describing or talking about an emotion, or differentiating between another's joy and another's despair, than I find in describing a red sensation or differentiating another's experience of red from his experience of yellow; and in reality I seem to find much less difficulty in the former case than in the lat-

[56] *Psychotherapy,* p. 23. Italics mine.
[57] *Ibid.,* p. 24.

ter. I do not see that the linkage of emotions with their physiological (*i.e.*, physical, not mental) accompaniments or expressions is any weaker or less "philosophically grounded," or any more "dependent on chance observation," than the linkage of sensations and percepts with their corresponding stimuli and physical objects: in fact, the usual modern psychological theory of emotion links mental emotion and physiological accompaniment in the very closest possible bonds, so that it is often doubtful whether an emotion should be called primarily a mental content or primarily a physiological condition. The description of emotion by *analogy, i.e.*, by the interpretation of its outward expressions, therefore, seems to offer absolutely no difficulty.

As to the more accurate method of description by *analysis*, what effect would the recognition of a non-sensational element have upon that method? None whatever. The affective elements as usually enumerated by those who recognize them at all are two—pleasantness and unpleasantness. *Pleasantness* is an indication that the individual wants more of the object or experience producing it, and leads to an approach to the object or a retention of it if there is danger of loss, or to a prolongation of the experience: *unpleasantness* has the opposite characteristics. It is plain, then, that in the case of pleasantness and unpleasantness, as in the case of sensations, there is a very definite "linkage to the physical world," and no possibility of doubting the presence of either when it *is* present, or of confusing the two types. Münsterberg's difficulties on this point, therefore, fall to the ground, and we conclude that all mental contents, non-ideational as well as ideational, are describable by analysis into elements which are linked necessarily with events in the physical world.

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BOOK III

THE POSTULATES OF PSYCHOLOGY

CHAPTER VI

The Postulates in General

1. *The Statement of the Postulates.*

85. Every science is based on postulates, that is to say, upon certain fundamental and essential presuppositions without which the science in question would be impossible. Science accepts such postulates as true, leaving to metaphysics the task of inquiring into the validity of that assumption, and into the nature and reality of the thing assumed. What, then, are the postulates of the science of psychology? What must psychology postulate if it is to be a complete and independent science? We shall find, I think, four of such indispensable presuppositions.

I. The first of these is a postulate held in common by psychology and the material sciences—namely, *the Existence of the Material World.* "With all other sciences," says Dr. Sidis, "psychology must postulate the existence of an external material world of space, time, and objects. Psychology does not inquire into the nature of these objects, as to what they are in themselves. This, as we have pointed out, is the business of metaphysics, not of science. Psychology, however, does ask how we come to know the outside world; it inquires as to the process by which external reality comes to be presented in consciousness."[1] In other words, the psychologist is as such not interested in the nature or laws of the material world, but he *is* interested in that world so far as it may become an object of knowledge.

II. The second postulate is peculiar to, and distinctive of, psychology—namely, *the Existence of Consciousness.*[2] Con-

[1] *Foundations,* p. 106. For a superficially different but fundamentally similar position, *v.* Bichowsky, *Jour. of Philosophy,* XVIII, 295 ff. (1921).

[2] *Ibid.,* pp. 14-16, 106 f.

sciousness itself is the subject-matter of psychology: hence there can be no science of psychology unless the existence of consciousness is assumed. But the question of the *nature* of consciousness is handed over by the psychologist to the metaphysician.

III. The third postulate is more complex, combining as it does the truths of the first two. This is the postulate of *the Interrelation of Consciousness and the Material World.* "Psychology, we said, deals with states of consciousness; but these states are not independent, floating in the air, so to say. They are in connection with some material existences; and not directly with physical reality as a whole, but with some definite individual body."[3] This postulate involves two subordinate ones: (1) that consciousness can be studied only so far as it is connected with some definite human *organism;* and (2) that the interrelation between consciousness and the *world beyond the body* is always through the medium of the individual body—especially of the *nervous system,* and most particularly of the *brain.* The interrelation itself, therefore, is twofold—a *psychophysical* and a *psychophysiological* interrelation; and each of the latter is also in its turn twofold, as we shall see.

A. The *Psychophysical Interrelation* is that between consciousness and *external objects* (*i.e.,* objects beyond the body),[4] and is of two types—(1) the *perceptual* or *knowledge* relation, the relation by which external objects become known to consciousness through the *bodily senses;* and (2) the *conative* or *action* relation (which Sidis strangely omits), or the relation by which consciousness impresses itself upon the external world through the *muscular system* of the body. Psychology must postulate these two things—a true knowledge of the material world by the mind (which becomes in philosophy the "epistemological problem"), and an effective power of the mind ("the will," as we commonly call it) to make changes in

[3] *Foundations,* p. 36.

[4] *V., op. cit.,* pp. 107-9.

the material world (giving rise to the philosophical problem of "free will").

But, as the above postulates themselves inform us, the interrelation between consciousness and the external world is not direct, but mediated by the nervous and muscular systems of the body.[5] Hence—

B. *The Psychophysiological Interrelation,* or that between consciousness and the *individual organism.* Numerous facts of common knowledge, and of experimental and pathological science, which it is unnecessary to enumerate here,[6] show the dependence of many of our mental processes upon certain physiological conditions of one sort or another, chiefly cerebral; and the fact that the *behavior* of the organism is or may be the expression of consciousness is also a commonplace. So strong is this evidence that psychologists are impelled to go beyond the exact boundary of the evidence itself, and make two universal assumptions as presuppositions of all their investigations: (1) that *all* mental processes have physiological conditions; and (2) that all mental processes tend to express themselves physiologically—either (a) *internally* only, in the brain, vital organs, and internal muscles (Watson's "implicit behavior": 27); or (b) *externally* also, in motor activity (Watson's "explicit behavior").[7] Of these two aspects of the psychophysiological interrelation, the first gives rise to an extremely important principle of modern psychology, which will occupy us at greater length in the next section—namely, the *Principle of Psychocerebral Parallelism.*

IV. The fourth postulate of psychology is that of the *Uniformity of Mental Life.* "Uniformity of relations among phenomena must be postulated if science is to be at all." By uniformity is meant the principle that "under similar condi-

[5] *V., op. cit.,* pp. 107 f.

[6] *V., op. cit.,* Chap. XII. Also, Münsterberg, *Psychology, General and Applied,* pp. 34-39; and *Psychotherapy,* pp. 34-40.

[7] Note the subordinate adverbs. Consciousness *always* expresses itself in *internal* behavior: it *may also* express itself *outwardly.*

tions like results follow." But "if under the same conditions different results follow, science would be an impossibility." Now psychology, like other sciences, must assume uniformity: "it assumes that there exist constant uniform types of mental activity with definite relations that can be formulated into psychological laws."[8] But the psychologist's postulate of uniformity is necessarily more complex than that of the natural scientist, since psychology must not only postulate for itself the uniformity of *mental* phenomena, but must also join with the material sciences in their assertion of the uniformity of *natural* phenomena, since the world of natural phenomena is the object of consciousness (*v.* the First Postulate). And this is not all, for if psychology postulates the interrelation of mental and physiological phenomena, and the uniformity of each of these, it must also postulate as a *corollary* of the above *the uniformity of psychophysiological relations.* "Definite physical processes must be concomitant with certain well defined psychic states. Were this otherwise, the two series, the mental and the physical, would be out of joint."[9]

The postulate of uniformity leads to a second great principle of modern psychology, though one not so widely accepted as that of parallelism—namely, the *Principle of Independent Psychical Causation.* To the discussion of this principle I shall devote a later division of this chapter. I append a summary of the postulates herein defined.

TABLE VII

SUMMARY OF THE POSTULATES

First Postulate: The Existence of the Material World.

Second Postulate: The Existence of Consciousness.

Third Postulate: The Interrelation of Consciousness and the Material World.

A. *The Psychophysical Interrelation;* between Consciousness and External Objects.

1. The Perceptual or Knowledge Relation.
2. The Conative or Action Relation.

[8] *Foundations,* p. 16. Author's italics reduced to Roman type.

[9] *Op. cit.,* p. 111. Author's italics reduced.

B. *The Psychophysiological Interrelation;* between Consciousness and the Individual Organism.

1. The Dependence of Consciousness on the Body:—
   The Principle of Psychocerebral Parallelism.
2. The Expression of Consciousness in Behavior: either—
   a. *Internally* only; or
   b. *Externally* also.

Fourth Postulate: The Uniformity of Mental Life.

Corollary: The Uniformity of Psychophysiological Relations.
The Principle of Independent Psychical Causation.

2. *The Principle of Psychocerebral Parallelism.*

86. The expression "psychophysical parallelism" is one which occurs frequently in metaphysical and metaphysico-psychological discussion; and yet when we examine into its meaning we find that it actually covers three distinct principles, to only one of which is it in the strictest sense applicable.[10]

(1) In the first place, the expression is often used to stand for the *inductive generalization,* noted under the head of III B 1 in the preceding section, that "all mental processes have physiological conditions." This principle, together with its associated principle that "all mental processes tend to express themselves physiologically," constitutes what we have called the Postulate of Psychophysiological Interrelation—a "postulate" because presupposed in all psychological investigation. The term "psychophysiological" is better than "psychophysical" here, because it states explicitly what *part* of the "physical" world is most directly associated with consciousness; and since the *nervous system* is that part of the body upon which consciousness principally depends, it is possible to narrow down our general principle to the statement that "all mental processes have *neural* conditions." Furthermore, since it is the *brain,* or more properly the *cerebrum,* which investigation has shown us to be the true "organ" or instrument of consciousness, we can still further reduce our formula to the proposi-

[10] Ward, article on "Psychology," *Encyclopedia Britannica,* Vol. XXII pp. 600 f. (The reference is to the eleventh edition.)

tion that "all mental processes have *cerebral* conditions." Both of these formulae, however, involve a certain idea of *dependence* of consciousness on nervous system or brain which goes beyond the actual evidence, since all that we need to postulate is a correspondence or *concomitance* between consciousness on the one hand and cerebral or neural process on the other. Hence the former of these two principles is often expressed in the formula, "No psychosis without neurosis"—that is to say, in positive terms, "every state of consciousness is accompanied by some distinctive condition of the nervous system"; and the latter will find itself most naturally expressed in the proposition that "every mental process is accompanied by some distinctive brain process." The former I call the "principle of psycho-neural concomitance," the latter the *Principle of Psychocerebral Concomitance.*[11]

(2) The expression "psychophysical parallelism" is also sometimes used with reference to a certain *methodological* principle based upon, but in its significance extending far beyond, the above generalization—the principle, namely, that in both psychological and physiological investigations the concepts of psychology and of physiology must be kept distinct, and the facts of each science be explained only in the terms of that science; that physiological terms and concepts must not be introduced into investigations of mental life, nor psychological terms and concepts into investigations of bodily activities; that psychological facts should be explained in purely psychological terms, and physiological facts in purely physiological terms. This principle does not preclude psychophysiological investigations as such—investigations in the field of what is commonly known as "physiological psychology," or of the interrelations which actually exist, according to our former principle, between mental and physiological processes—but merely to assert that there *is* an independent field of "pure psychology" into which physiological concepts are not permitted to intrude, just as there is a field of pure physiology into which

[11] *V.*, Münsterberg, *Psychology General and Applied*, pp. 39 f.

psychological concepts are not permitted to intrude. This principle can perhaps best be designated, the *Principle of Psychological and Physiological Independence.*[12]

(3) Finally, there is included in the same general expression a *metaphysical* principle to which, and to which alone, the term *Psychophysical Parallelism* is properly applicable—namely the principle that the interrelation between mind and body, and between the mind and the outside world, is not a causal interrelation, but *merely* one of concomitance.[13] This principle is opposed to that of psychophysical *interactionism,* which accepts the causal interpretation of the interrelation between mental and physical. With this question of interpretation, however, we are not here concerned. The *fact* of interrelation or concomitance, as formulated above in our first principles, we must accept because experience shows it to be true; and we find it convenient to accept also the *methodological* principle of independence as expressed in our second formula; but the question of the *interpretation* of this interrelation, whether it is or is not causal, the psychologist gladly leaves to the metaphysician.[14]

[12] *V.,* Note at close of this section.

[13] The term "parallelism" is intended to emphasize the fact, not only that there is something physical corresponding to or concomitant with every mental process, but that this is a *mere* correspondence or concomitance; that mental processes and their concomitant physical or physiological processes go on side by side—in "parallel" lines, as it were—without interfering with or causally affecting each other. The concept of parallelism, therefore, involves more than that of concomitance, and is in fact a combination of the concepts of concomitance and of independence.

[14] Many psychologists, as Sidis, seem to find it necessary to deny dogmatically the causal interpretation (*v. Foundations,* pp. 78-81), but in doing so they are advancing beyond the demands of science. I accept as heartily as they the non-causal interpretation, but I do so on metaphysical grounds which do not concern even the theoretical psychologist. The relation between the *nervous system* and the *external world* is of course a causal one (*v.* Sidis, *op. cit.,* p. 110); but all that we need to assume as to the interrelation of nervous and *mental* processes is their coexistence or concomitance, which may or may not be a causal concomitance, according as metaphysical considerations may determine.

Disregarding, then, this third principle, we may combine the first two, which alone concern us here, under the term, the *Principle of Psychocerebral Parallelism,* formulating the same as follows: *Every mental process is accompanied by some distinctive brain process, but in the description and explanation of the former only psychological concepts and terms may be employed.*

Note on the Principle of Independence

It seems well to add in a note a few words quoted from the writings of Dr. Bernard Hart concerning the importance of the Principle of Independence. "It is of the utmost importance," he says, "that in the final 'laws' obtained by either [psychological or physiological methods] there should be no mixing of terms. The physiological laws must contain no psychological terms, and the psychological laws must contain no physiological terms. Nothing but hopeless confusion can result from the mixture of 'brain cells" and 'ideas.' "[15]

Again: "The physiologist must not introduce psychological conceptions into his chain of cause and effect, nor must the psychologist fill up the gaps in his reasoning with cells and nerve currents."[16] "The various elements entering into a conceptual construction must all be of the same mode: they may be either physical or psychical, but cannot consist in a mixture of the two."[17]

Dr. Hart seems to think the psychologist is much the more frequent offender against this principle than the physiologist. "No physiologist," he says, "would consent to admit 'ideas' as active elements in the sequence of changes which take place in the nervous system. He simply points out that he has no use for such a conception, and that, so far from helping him in his explanation of phenomena, it vitiates his reasoning, and destroys the validity of all his former concepts. The

[15] *Psychology of Insanity,* p. 18.
[16] Article in *Subconscious Phenomena,* p. 118.
[17] *Ibid.,* p. 122.

psychologist, on the other hand, is a weaker vessel."[18] Professor Fullerton, however, has shown, in a careful study of Foster's *Textbook of Physiology,* taken as a sample of textbooks of that science, that physiologists are by no means free from this error.[19] "Exact knowledge of the antecedents of any bodily movement does not exist," says Professor Fullerton, "and in its absence the physiologist is forced to give such fragmentary explanations as he can, often even overstepping the limits of his own science and using concepts which are out of place in it, but which he seems to be compelled to use." This may be necessary "in the existing state of the science of physiology," but "a completed science of physiology" would be "wholly independent of psychology, and a book on physiology would have no excuse for containing psychology." Independence, then, is accepted by Professor Fullerton as an ideal, but an ideal which, he says, "smiles at us from a hopeless distance."

Personally, and as regards the science of psychology, I do not view the matter quite so "hopelessly," and I do feel the principle of independence to be a valuable guiding principle in all psychological investigation, and that any psychological investigation which violates this principle is "vitiated" and rendered unscientific by that very failure. And should any feel that strict adherence to the demands of this principle would involve the psychologist in useless pedantry, let him take heart from Professor Titchener's words that "for all practical purposes" we may continue to speak of our mental grief as the cause of our physical tears [or as the effect of the words of a physical telegram], just as "the astronomer does not scruple to talk, with the rest of us, about sunrise and sunset." "What we have to guard against is not the phrasing of these statements, but their popular interpretation." The scientist must explain physical tears in physical (physiological) terms, and mental grief in mental terms (*v.* next division of this chapter);

[18] *Ibid.,* pp. 118 f.
[19] *Psychological Rev.,* III, pp. 1 ff. (1896).

but he is quite at liberty in ordinary discourse to "explain" either in terms of the other.

3. *The Principle of Independent Psychical Causation.*

a. *The Problem of Psychological Explanation.*

87. The aim of scientific explanation in any field is the determination of the causal relations which subsist among the various phenomena contained within that field (52, 53). The aim of psychological explanation, therefore, must be the determination of the causal relations which subsist among mental phenomena. If psychology is to be a complete and independent science, it must postulate that every mental phenomenon has a mental cause. Such a principle of *independent psychical causation,* as it may be called, would seem to be an essential condition of a complete and independent science of psychology.

Certain obvious and pressing difficulties, however, in the application of the causal concept to mental phenomena have led many to deny the possibility of a distinct psychical causation, and to affirm that mental processes can be causally explained only in terms of the accompanying brain processes. Hence we have as a matter of fact two opposing

Theories of Psychical Causation

1. The *Independence Theory,* represented by such psychologists as Wundt, Yerkes, etc., that mental phenomena are scientifically explicable in purely psychical terms.

2. The *Cerebral Theory,* represented by Münsterberg, Sidis, and others, that mental phenomena are scientifically explicable only in terms of the accompanying brain processes.

All the psychologists named above are advocates of metaphysical parallelism; but whereas Wundt and Yerkes accept also the methodological principle of independence, Müunsterberg and Sidis reject this. On the basis of our combined postulate of psychocerebral parallelism we assert also the above formulated principle of independent psychical causation as a

necessary consequence of the former when taken in connection with the postulate of uniformity defended in section 85. Our first task at this point will be to take account of the objections which may be offered to the principle of independent psychical causation, our second to consider the cerebral theory which has been proposed as an alternative to the independent principle, and our third to defend the independent theory against its critics.

b. *The Difficulties of Independent Psychical Causation.*

88. *The Laws of Psychology.*—It is impressive to note how few are the "scientific laws" which psychology has up to the present time developed when compared with the enormous number of such laws which refer to the realm of physical nature. And yet this discrepancy is rather the fault of the writers of psychological textbooks than the defect of psychological science. Professor Yerkes has taken cognizance of this unfortunate condition of affairs, and has devoted the entire Fourth Part of his *Introduction to Psychology* to a specification of the various laws or generalizations which psychological research has actually achieved. "It is rather because of the youth of the science as science," he thinks, "than because of the character of its materials, that psychology has not accumulated a larger body of generalizations, and that the textbooks do not more frequently contain the word law."[20] And yet even Yerkes has been able to accumulate but eighty or so generalizations in his chapters devoted to the subject, and many of these are psychophysical rather than psychological in the strict sense. As examples, the following may be cited—

The Law of After-Images: "Under certain conditions, a sensation is uniformly followed by an after sensation which bears a definite qualitative and intensive relation to the original sensation."[21]

[20] *Op. cit.*, p. 250.
[21] P. 264.

The Law of the Relation of Affections to Sensations: "Every sensation is accompanied by an affection."[22]

The Law of the Relation of the Intensity of an Emotion to its Duration: "The more intense an emotion, the shorter its duration."[23]

The Law of the Relation of Repetition to Clearness: "The repetition of an experience tends at first to increase its clearness, but beyond a certain limit it tends rather to diminish it."[24]

And most important of all, the *General Law of Association:* "When two sensations, affections, or other experiences, occur together or successively, they tend to form a whole, and are said to be associated. Later the appearance in consciousness of one of the experiences tends to be followed by the appearance of the other."[25]

Let us inquire into the reason for the paucity of psychological laws.[26]

89. *Causation in the Physical and Mental Realms.*—"The concept of causality," says Dr. Sidis, "cannot be worked in psychology in the same way that it can in the physical sciences. The circle of physical processes is complete in itself. A physical process without ceasing to be physical can be traced endlessly in the past or future, all the links of the endless process must all be physical in their nature. For if we permit in the endless chain of links of the physical process any other but physical links to be interpolated, all the physical sciences must fall to the ground, since at any stage we may get hold of a process of which the antecedent link is not of a physical nature. In short, the postulate that forms the basis of physical science is that the antecedent and consequent of a physical process taken at any stage of the process are physical in their

[22] *Introduction to Psychology*, p. 267.
[23] P. 288.
[24] P. 296.
[25] P. 301.
[26] *Cf.*, through the ensuing discussion, Table IX, at the close of sect. 95.

nature. This is the *principle of continuity.* The whole edifice of the physical sciences is based on this principle.

"If we now turn to psychology, we find that it cannot be based on a postulate of similar character. Psychology cannot work on the assumption that the processes it deals with can be traced endlessly in either direction, past or future. Unlike the physical, the psychic process is finite and final—it has a beginning and an end."[27] In other words, the mental realm as contrasted with the physical is governed by the *principle of discontinuity;* and the problem of psychical causation is throughout the problem of overcoming this defect (for such it must be regarded) of discontinuity, and saving the independence of psychological science in the face of that defect.

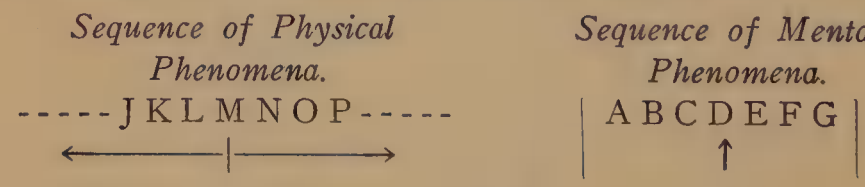
This discontinuity, however, shows itself in various ways, so that beside the *general problem of discontinuity,* which constantly confronts us, there are two *special problems* which call for distinct treatment—the problems of the *finiteness of mental sequences,* and of the *transitoriness of mental processes* as such. We shall consider these in the order given.

(1) *The General Problem of Discontinuity* shows itself in three directions: (a) the conscious mental life of the individual is subject to numerous *temporary suspensions* which produce gaps in the individual stream of consciousness—as in sleep, hypnosis, periods of amnesia or loss of memory, etc.; (b) the conscious *mental life of the individual* has a definite *beginning* (at or near birth) and a definite *end* (at or near death, so far as the possibility of scientific observation is concerned)—"if the psychic life of the individual is taken as a whole and traced backward in the past, we arrive at some point when the stream of consciousness begins, and on following it forward we finally arrive at a point where the stream of

[27] *Foundations,* p. 82. Italics mine. *Cf.* Titchener's *Textbook,* pp. 39 f. (first part of paragraph in fine print).

consciousness ends";[28] (c) *phylogenetically,* "in the history of biological evolution, there was a time when psychic life began, and there will come a time when all psychic life will disappear from our globe."[29]

(2) *The Finiteness of Mental Sequences:* Any physical process may be traced backward and forward in time indefinitely, each antecedent and each consequent being itself physical; but every sequence of mental processes has a definite beginning and end *as* mental. Two variations of this general fact may be noted. (a) Many mental sequences may be actually traced backward and forward to their initial and final stages, the typical mental sequence being a medium of sensori-motor adjustment. That is to say, all mental sequences probably, and many by actual observation, begin originally with some sensation and end finally in some conative process—impulse or volition. But the antecedent of a sensation is not a psychical cause, but a physical stimulus; and the obvious consequent of a conation is not a psychical effect, but a muscular (*i.e.,* physical) action. (b) Some mental sequences or "trains of ideas" seem to start off without any antecedent in actual consciousness (as when an idea "suddenly pops into one's head," and then leads to a train of associated ideas), and may be checked or completely diverted by a physical stimulus[30] (as when, in the midst of a conversation between two persons, a third, who is a mutual friend of the others,



[28] Sidis, *Foundations,* p. 83. "Ends, so far as scientific means of approach are possible" is what is meant, of course. The question of immortality, and the methods of psychical research, are not involved here.

[29] *Loc. cit.*

[30] It is for this reason that so many of the "laws" of psychology have to be stated in terms of *tendency*—"if A occurs, B tends to follow"; "under certain conditions, A produces B," etc. (*v.* examples in preceding section).

unexpectedly enters the room). These conditions with regard to mental sequences may be symbolized as follows in their contrast to the situation as it concerns physical sequences.— Physical phenomenon M may be the effect of physical phenomenon L, L the effect of K, and so forth indefinitely; and M may be the cause of N, N the cause of O, and so forth indefinitely. Idea D may be traced back to C as its "cause," C to B, and B to A; but when we come to the sensation A the only antecedent is a physical one: so D may arouse E, E may arouse F and F may arouse G; but with G the sequence may come to an abrupt conclusion.

(3) Münsterberg's argument against the principle of independent psychical causation is founded on a more fundamental difficulty than those to which we have heretofore directed our attention—namely, the fact of the *Transitoriness of Mental Processes* as such (79 (2)). The regular and indefinitely extending sequence of causes and effects in the physical world is understandable, he tells us, because we know that through all the changes of form and position in physical things, their atoms or ultimate constituents persist; whereas each mental fact exists only for the moment of its actually being experienced, every new moment of consciousness bringing new contents before the experiencer. For example, "the candle may disappear when it burns down, but every atom of it can still be traced in the atmosphere"; whereas when an idea or feeling disappears from the mind, it is gone irretrievably— "we may have a thousand times new ideas of the same object, but the same idea cannot come back a second time."[31] Therefore, though there may be regularity and *uniformity of sequence* in the mental realm, there is no detectable *necessary causal connection* among the phenomena of that realm.[32]

These various difficulties affecting the principle of independent psychical causation will be met in a later division of this

[31] *Psychology, General and Applied,* p. 31. *Cf.* also, *Psychotherapy,* p. 31.

[32] *Cf.* Sidis, *Foundations,* p. 85.

chapter; but so far as this objection of Münsterberg's can be separated from the general problem of discontinuity, it may be disposed of in a few words at this point. For while the fact of transitoriness is undoubtedly a difficulty, it is by no means an absolute hindrance to our principle, should the latter be called for on other grounds. For it is extremely questionable whether the idea of "necessary connection" is an essential part of the idea of cause: rather is it the case that "uniformity of sequence" is all that is implied in the notion of causality (53). As Yerkes puts it, "the essence of the causal relation is uniformity of the order of events." "We never observe *necessary*[33] uniformity." "The important point for present consideration is that of observed sequences of events in consciousness. If the sort of regularity which we discover in the world about us, and upon which we have learned to depend in all of the affairs of life, does not exist also in mental life, there is no ground for a science of psychology similar to the science of physiology, no ground for the explanation of consciousness in terms of mental processes, and no ground for the assumption that psychical events may be predicted and controlled as are physical events."[34] But if, on the contrary, as Münsterberg himself admits, and as Yerkes by many examples[35] shows to be the case, "the sort of regularity which we discover in the world about us" *does* "exist also in mental life," that is all we need to postulate the presence of causation in the psychical realm.

c. *The Cerebral Theory of Psychical Causation.*

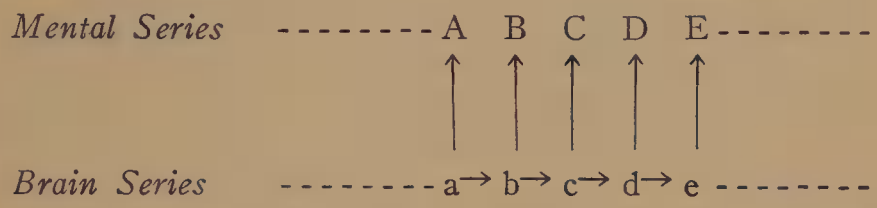
90. *The Cerebral Theory.*—Those psychologists who consider the above objections to the independence theory insuperable, refer the causes of mental phenomena to the physiological realm, and explain the sequence of mental phenomena in terms of the accompanying brain processes. Psychologists

[33] Italics mine.

[34] *Introduction to Psychology,* pp. 328 f.

[35] *Op. cit.,* Chap. XXV.

who reject methodological parallelism interpret this as a *direct causal* explanation of mental processes in physiological terms: advocates of methodological parallelism, on the other hand, take it as a necessarily *indirect* explanation. As Sidis puts it, "the psychic process not having its links causally connected, the causal necessity [*sic*] can only be followed along its concomitant physical or physiological series."[36] Thus, in the diagram—



the sequence of A and B is explained by referring it to the brain sequence, *ab*.[37] B, we say, invariably follows A, because the accompanying brain process *b* is the effect of the accompanying brain process *a*. "To explain mental facts," says Münsterberg, "means to think them as parallel to the brain processes which have their own causal connections in the physical world."[38]

Münsterberg insists that this denial of causal relations to mental processes does not imply that mental phenomena have *no* independent inner connections, but merely that they have no *causal* relations: on the other hand, they do have a *purposive* connection. Mental processes in their inner reality are an expression of purpose; but since this inner life-purpose is

[36] *Foundations*, p. 85.

[37] The arrows connecting the members of the brain series indicate the causal relation of the brain processes. The absence of similar arrows connecting the members of the mental series indicates the separateness of the various mental processes as viewed by the advocates of the cerebral theory. The arrows pointing from the various members of the brain series to the corresponding members of the mental series indicate the complete dependence, according to this theory, of the latter upon the former.

[38] *Psychotherapy*, pp. 41 f. *Cf.* also *Psychology General and Applied*, pp. 40 f.

also always further expressed through brain processes, we may give the mental phenomena an indirect scientific explanation through the causal connections which subsist among those brain processes.[39]

91. *Criticism of the Cerebral Theory.*—However one may feel impressed by the weight of the arguments against the independence theory, it is hardly possible not to feel equally impressed by the artificiality and inadequacy of the alternative doctrine. The scientist wants to be able to say, "A is the cause of B," "B is the effect of A"; and is certain to feel that such expressions as, "B is explained when we think of it as parallel to *b*, which in its turn is the effect of *a*"—or, "the sequence AB is to be explained by following along the concomitant series *ab*"—are poor substitutes for the more direct formula. Of course, if we can say at once, "mental process B is the effect of brain process *b*" or "of brain process *a*," the demand of simplicity is satisfied; but if we take this position, we are renouncing the independence of psychology, even if we see no metaphysical objections to such a statement. What such writers as Sidis and Münsterberg are trying to do is to save the science of psychology from dependence upon that of physiology, in the face of what seems to them to be an almost insuperable obstacle to the success of that endeavor—namely, the absence of any causal relations in the mental realm. But if we can satisfy ourselves that the difficulties of the principle of independent psychical causation are *not* insuperable, we can save the science of psychology without sacrificing simplicity. Before taking steps in this direction, however, there are one or two other points to be noted in the way of criticism.

In the first place, we should recognize that the explanation of mental processes in terms of the accompanying brain processes is not in any sense a causal explanation of the former, but a distinct type of explanation peculiar to psychology—namely, *explanation by correlation;* and that the problem of correlating mental processes with brain processes is not strictly

[39] *Psychotherapy,* p. 33.

speaking a psychological problem at all, but a *psychophysiological* problem.

Furthermore, as Professor Yerkes reminds us, it is "even truer to say that when two processes, the one physiological (in the brain) and the other psychological (in consciousness) occur together uniformly, *either* may be offered by science as an explanation of the other."[40] That is to say, the mental sequence AB may be explained by the brain sequence *ab*, or the brain sequence *ab* by the mental sequence AB, indifferently; but in neither case is the explanation a causal one.

The *complete* truth, indeed, is that every phenomenon involving intelligence is a *double effect of a double cause.* One state of mind-brain produces another state of mind-brain: neither is A the cause of *b* nor *a* the cause of B, but A*a* is the cause of B*b*.[41] For the complete understanding of any mental *or* cerebral phenomenon, both kinds of explanation are necessary; but in purely psychological investigations, the cerebral aspect may be disregarded.

The above criticism of the cerebral theory of psychical causation may be summed up as follows: (1) It is an artificial and inadequate theory, which should not be accepted if it is possible to escape it; (2) it is not a substitution of one type of causal explanation for another, but the complete rejection of the causal concept as inapplicable in psychology, and the substitution for it of the principle of explanation by correlation; (3) this method of explanation is a psychophysiological rather than a psychological method, and if substituted entirely for the causal method results in the denial of the claim of psychology to be an independent science within its own field; (4) the principle of correlation may be employed with equal justification to explain either mental phenomena in terms of cerebral, or cerebral phenoment in terms of mental; (5) the complete truth with regard to phenomena involving consciousness is

[40] *Introduction,* p. 36.

[41] *V.,* Bain, *Mind and Body,* pp. 131 f.

that the mental and cerebral processes taken together are joint effects of other mental and cerebral processes taken together, but we are at liberty to ignore either aspect if our concern is entirely with the other.

d. *Defence of the Independence Theory.*

92. *Methods of Explanation in Psychology.*—Our examination of the cerebral theory has introduced us to a method of explanation which psychology employs, and which is as distinctive of psychology as is the observational method of introspection—namely, the method of explanation by correlation. Advocates of the cerebral theory use this method alone, and fail to recognize that in doing so they are rejecting the causal concept in psychology together: advocates of the independence theory accept the correlation method of explanation *as well as* the causal method, just as all psychologists today who employ the method of introspection admit also the value of the method of observation of behavior; but they insist that the correlation method is an *indirect* method of explaining mental processes, just as observation of behavior is only an indirect method of getting at the facts of mental life.

Putting these various considerations together, we come to the following conclusion: All mental phenomena may be explained in either of two ways—(1) in terms of other mental phenomena, or (2) in terms of the accompanying brain processes—but only the former is a causal explanation.[42]

It is a strange fact worthy of note that methodological parallelists differ markedly in their views of the bearing of the principle of parallelism upon the problem of psychological explanation. Both Wundt and Yerkes hold, in the words of the latter, that the principle of parallelism "forces the acceptance of independent psychical causation,"[43] correlated at all points with cerebral causation, but distinct from it. Münsterberg, Sidis, and Titchener, on the other hand, insist, as we have

[42] *V.*, Yerkes, *op. cit.*, pp. 317 f.

[43] *Ibid.*, p. 333. *Cf.* Wundt, *Outlines*, p. 367.

seen, that the principle of parallelism "forces" us to reject *all* causal explanation in psychology. As a matter of fact, all that the principle of parallelism "forces" us to do is to reject the notion that brain processes cause mental processes; and the real difference between the two groups of parallelists is that the second group regard the obstacles to the acceptance of independent psychical causation to be insuperable, whereas the first group do not. The principle of parallelism forces us to deny the cerebral causation of mental processes and to acknowledge the explanation of mental processes in terms of cerebral processes to be a non-causal type of explanation; and if we accept the principle that only a causal explanation of phenomena is a completely satisfactory explanation from the scientific point of view, the principle of parallelism also forces on us the alternative of either accepting also the principle of independent psychical causation, or else admitting that psychology is by its very nature an incomplete science. Our next step, then, is to see whether it may not be possible to overcome the objections to the independence theory which we considered above (89).

I append here a summary of the two theories of psychological explanation, and a diagram of the position involved in the independence theory—

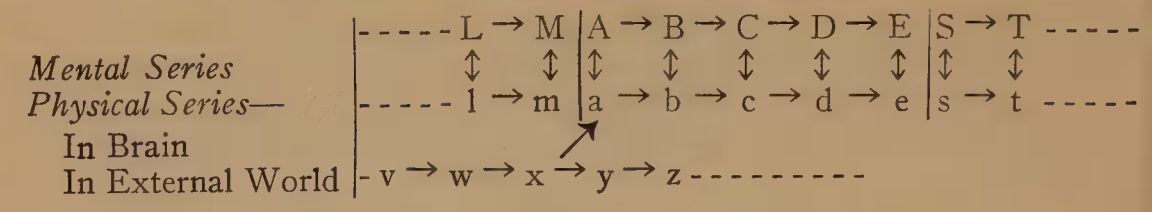
TABLE VIII

THEORIES OF PSYCHOLOGICAL EXPLANATION

According to the	Mental Phenomena can be explained—
Cerebral Theory,—	only in terms of the accompanying *brain* processes (*indirect** *causal* explanation).
Independence Theory,—	either (1) in terms of other *mental facts* (*direct causal* explanation); or (2) in terms of the accompanying *brain* processes (explanation by *correlation*).

*That is to say, if the psychologist is also a parallelist: if he is not, this would be a *direct* causal explanation.

INDEPENDENT PSYCHICAL CAUSATION



The chief differences between this diagram and the one illustrating the cerebral theory (90), so far as the mental and cerebral series alone are concerned, are: (1) the presence of arrows along the mental series, indicating that there is an "independent psychical" causation as well as an independent cerebral causation; (2) the arrows connecting the mental and cerebral concomitants are double-headed, to indicate that the members of either series may be explained (by correlation) in terms of the other, not merely the mental in terms of the cerebral. A series of events in the external world is added here, to indicate that, the brain and the world outside (including, if you like, the body itself) being both of them parts of the one physical universe, there is a perfect causal connection between them. Let the series *vwxyz* - - - - represent a series of events connected with the lighting and shining of a candle: *v*—a man, P, strikes a match; *w*—P lights a candle with the match; *x*—P presents the lighted candle before the eyes of another man, Q; *yz* - - - - —a series of events following the incidents enumerated. Presupposing the above, *a* may indicate the stimulation of Q's visual centres by the light from the candle—a perfect causal sequence, accompanied at once by A, a sensation of light in Q's consciousness. Now, in the diagram, Q is thought of as having been concerned, prior to the seeing of the candle, in a train of thought - - - - LM, with its accompanying series of brain processes - - - -*lm*. The stimulus *x*, however, produces results which interfere at once with Q's previous train of thought, and start an entirely new train, ABCDE; which may, for some reason which does not interest us, be in its turn brought to a conclusion with E, and followed by a third sequence, ST - - - -. In this example, we have three kinds of sequences—(1) four physical causal sequences, - - - - *lm*; - - - -*vwxabcde*; - - - -*vwxyz*- - - -; and *st*- - - -; each of them complete in itself: (2) three mental causal sequences, - - - - LM; ABCDE; and ST - - - -; each of them complete in itself; and, finally, (3) three correlation sequences, L*l*-M*m*; A*a*-B*b*-C*c*-D*d*-E*e*; and S*s*-T*t*—all the requirements of psychological, physiological, and physical science being allowed for.

93. *The Difficulties of Independent Psychical Causation.*—It will be remembered (89) that acceptance of the postulate of independent psychical causation gives rise to three problems—the general problem of the discontinuity of mental life, the

problem of the finiteness (to use Dr. Sidis's term) of mental sequences, and the problem of the transitoriness of mental processes as such. Of these three problems the last, so far as it can be separated from the first, has already been dealt with (89); and we shall find that in only one point can the second problem, either, be distinguished from the more general one. Let us see how this is.

The expression, "finiteness of mental sequences," means, in general, that every series of mental processes has a definite beginning and a definite termination, *as* mental. More specifically, we may for our present purpose distinguish three points: (1) that most mental sequences are traceable back to *sensations,* which in turn *have no psychic cause,* but originate in physical stimuli; (2) that many mental sequences *cannot be traced to any apparent cause,* mental or physical—they seem to start off without any antecedent in actual consciousness; (3) that all mental sequences issue finally in some *conative* process (impulse or volition), and so in *motor* (*i.e.,* physical) *activity.* The third point, however, we can easily dispose of; for though it is true that conative processes issue in motor activity, and have such motor activity as their *raison d'être,*[44] nevertheless they do also have *psychical effects* (as in character, memory, etc.): hence, there is after all no real problem here. The first difficulty we shall call "the *problem of sensations,*" and shall consider at once: the second is really a part of the general *"problem of discontinuity,"* which is to occupy our attention throughout most of the remainder of this book.

94. *The Problem of Sensations.*—How can we defend the principle of independent psychical causation in the face of the evident fact that mental sequences originate with *sensations,* and that sensations in their turn have an acknowledged *physical origin?* Three answers to this question are, I think, possible:

(1) We may take the easiest way out of the difficulty, and admit that when we have traced our mental sequences back to

[44] What Aristotelians would call their "final cause."

sensations we have gone as far as the principle of independent psychical causation can carry us; acknowledge that *sensations have a physical cause,* and are exceptions to the general rule; and resort in their case to the indirect method of explanation, by correlating them with the accompanying brain processes. But thus to allow any exceptions to our general principle is at once to renounce our entire claim to the independence of psychology, and retract all the objections we have been offering to the cerebral theory. Far better would it be to accept the cerebral theory throughout than to employ two separate principles of explanation in different parts of the same general field. The independence theory applies both methods of explanation (by causation and by correlation) throughout the entire field, the cerebral theory applies the correlation method throughout; but this proposed compromise would apply one method in one part of the field, and fall back upon the other in those parts of the same field in which it seems that the first method cannot be worked. We cannot, however, allow such tearing asunder of that which is in its essential nature one.

(2) We might admit frankly that *sensations have no cause.* In so doing we are not, as in the former case, explaining what can be explained in two different ways at different times, but admitting that there are some mental processes which by their very nature are scientifically *inexplicable.* Only complex phenomena can be explained: absolutely simple and elementary phenomena are ultimate data, primary facts, and so inexplicable. This is as true of physical phenomena as of mental, and not merely a condition that hampers the psychologist alone among all scientists: the ultimate elementary constituents of the physical universe (atoms, electrons, or whatever they may be) are as inexplicable as are the ultimate elementary constituents of the psychical universe. As Professor Yerkes puts it: "A sensation is just a psychic fact, an atom is similarly a physical fact. Each is useful in enabling us to describe and explain more complex phenomena, but neither can be explained by the science which makes use of it."[45]

[45] *Introduction to Psychology,* p. 323.

So far as physical things are concerned, the theologian may go one step further than the scientist, and refer the elements out of which the physical world is composed to God as their Creator, though in so doing he is transcending the bonds of the physical universe altogether, and introducing a non-scientific principle of reference. In the same way, so far as mental phenomena are concerned, the physicist may refer sensations to physical stimuli as their source, but in so doing is transcending the bounds of the mental world, even though still employing scientific (if non-psychological) concepts. Physical science *as science* can only accept the ultimate facts of the physical universe as given, and pure psychology must simply treat the ultimate facts of mental life in the same way.

Let us press the analogy a little further. Let us accept for the purpose of the illustration the theory of successive as opposed to that of simultaneous creation—the theory that the elements out of which the physical universe as we know it today are composed were created, not at a single moment in remote time, but gradually, at successive times in the history of things. If we had been privileged as onlookers to be present during any period of this creative process, we should have observed a series of creative acts resulting in the production of a greater and greater number of atoms as time passed on. Now the history of the mental universe of each one of us is of just this nature—a series of experiences, a "stream" of conscious moments; each experience of a sensory type—each new color, sound, odor, etc.—in the early weeks or months of our individual lives at least, being a new creation in our mental universe. Even if our later mental lives give us no absolutely new sensations, but merely new combinations of elements which have been experienced before, nevertheless in our first years our mental universe was being gradually built up in the same way as was the physical universe according to the theory I have described. So long as we are *in* the world, we must take the primary facts of that world just as they are—we cannot explain them in scientific language, and we can neither

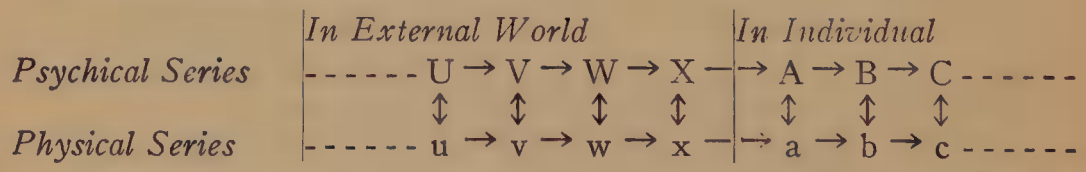
annihilate them nor create new ones. In the same way, so long as we are shut up within the confines of our own individual mental universes, we must take the primary facts of mental life as they are; for we can neither explain them in psychological terms, nor annihilate or create them. Theology, in other words, bears the same relation to the facts of the physical world that the physical sciences bear to the facts of the mental world.

The method just outlined of solving the "problem of sensations" is, I think, the best one for the scientific psychologist to adopt; but there is a third possible solution—

(3) We may extend, as many philosophers have done, the principle of psycho-cerebral parallelism into the external world, and adopt the *metaphysical doctrine of Panpsychism* or Universal Psychophysical Parallelism (86 (3))— that every physical thing (not merely every brain process) has a psychical aspect. In that case, a sensation would be explained as the effect of a psychical cause—namely, the psychical aspect of the stimulus.[46] This theory is not so fantastic or baseless as it seems as thus abruptly stated, when taken in connection with certain general metaphysical considerations; but we cannot go into ultra-scientific questions here, and for the purposes of scientific psychology such a solution of our problem as this would be undesirable.

95. *The Problem of the Discontinuity of Mental Life*, which meets us at every turn in our attempt to explain psychi-

[46] Our diagram would then take on somewhat the following form, the letters having the same significance—



Mental process A (Q's observation of the candle) would not be the effect of brain process *a*, as the cerebral theory would demand; and would not be denied any cause at all, as our second solution has it; but would be explained as the effect of psychical phenomenon X, the correlate of the physical process *x*.

cal processes, can be solved on independent principles only by the postulation of some form of mental life extending beyond the field or below the level of personal consciousness—*i.e.*, by the *Postulate of the Subconscious.* If this postulate is accepted, the principle of psychical causation is extended to include subconscious as well as conscious psychical causes. The two following chapters will be devoted to a consideration of this postulate.

TABLE IX

Difficulties in Accepting the Principle of Independent Psychical Causation, and How they may be Met.

Difficulties	*Proposed Solutions*
I. General Problem of Discontinuity	Postulation of the Subconscious.
II. Finiteness of Mental Sequences:—	
A. Sequences having Physical Antecedents and Consequents:—	
1. Sensations have Physical Antecedents.	a. May say they have physical cause. b. May say they have no cause. c. May say they have psychical cause in outer world (panpsychism)
2. Conation has Physical Consequents.	Has also psychical effects.
B. Sequences having no apparent Antecedents or Consequents.	(Belongs to general problem of discontinuity)
III. Transitoriness of Mental Processes.	(*Do.*)

e. *The Doctrine of Chance in Psychology.*

96. *Sidis's Doctrine of Chance in Mental Life.*—Dr. Sidis applies the biological concept of "chance variations" to psychology. He admits that there is a "purposive thought" underlying the actual stream of conscious contents, but claims that the ideas that present themselves in consciousness at any one moment are "simply the accidental chance material which the given momentary purposive thought selects" as means for "the achievement of its purpose."[47] The agent of this mental selection is *Attention,* which for Sidis corresponds to the

[47] *Foundations,* p. 98.

factor of "natural selection" in the biologist's scheme of things. In other words, ideas come into consciousness by chance—*i.e.*, without any cause; but through the instrumentality of attention, useless ideas which do not satisfy the needs of the "momentary purposive thought" are rejected, and only the valuable ones are permitted to survive.[48]

This is, of course, a purely *negative* doctrine of attention, and is to be contrasted with the more usual positive view that attention actively selects out of its material those ideas which are at the time the most suited to the needs of the mind. One might accept the chance view of how ideas *come* into the mind, and either the active or passive theory of attention as to how some ideas *stay* in the mind and others do not.

Sidis distinguishes, furthermore, three *degrees of attention.* (1) "When the selective process of attention is *rigid,* more of the chance comers are rejected as not adapted to the purpose";[49] (2) "when the process of attention *relaxes* in the rigidity of its selective activity, more chance images and accidental variations of thoughts are presented to and accepted by consciousness"[50]—as in reverie, alcoholic delirium, mild hypnosis, etc.; and (3) "when the process of attention becomes *completely relaxed*—as in sleep, fever, or in the acute forms of mental maladies—the chance images and accidental variations of ideas come and go without aim or purpose."[50] "Not purpose," then, "but chance," says Sidis, "is at the heart of mental life."[51]

97. *Criticism of the Doctrine of Chance in Psychology.*—But to accept this doctrine would be to surrender all claims as to the scientific status of psychology. When the biologist speaks of "chance variations," he cannot mean, if he is to be consistent,[52] that those variations have *no* cause, but merely

[48] *Cf.* the biological concept of "survival of the fittest."

[49] *Foundations,* p. 98. Italics mine.

[50] *Op. cit.,* p. 99. Italics mine.

[51] P. 100.

[52] Of course he *may* mean just this; but when he does, he is open to the same charges that I am presenting here.

that their cause is too complex or too obscure to be determinable; and the same is true of the psychologist. No postulate can ever be empirically verified beyond any possibility of its refutation in the future, but the causal postulate is nevertheless essential, *as* a postulate, to any complete science.

Even Sidis admits a certain degree of independent psychical causation in the sense of "invariable sequence"—which is, after all, the only sense that causation ever has in science. "If of two phenomena, one antecedent and the other consequent, the consequent is invariably observed to depend in its variation on the antecedent, such an antecedent is declared to be the cause of the consequent": "where the phenomena are observed to stand to each other in functional relation of invariable sequence, the antecedent is declared to be the cause of the consequent"—such are his definitions of causation.[53] Later on he tells us that "finite as the psychic process is, it has a series of antecedents and consequents," and "insofar as these can be traced, one can keep within the bounds of the psychic process only."[54] In admitting this, Sidis is conceding a partial independence to psychology; but if the latter is to be a *complete* as well as an independent science, the causal process must be held *universally* "within the bounds of the psychic process only." In other words, the principle of psychical causation must be what the Freudians call a principle of "psychological determinism."[55]

[53] *Foundations,* pp. 101 f.

[54] P. 105.

[55] Dr. Sidis's repeated strictures, throughout the book under review and its two successors, upon what he is pleased to refer to as the Freudian "so-called 'psychoanalytic science'" (*op. cit.,* p. 99 especially), are petty, unfair, and indicative of that partial (in both senses of the term) knowledge which is often more pernicious than complete ignorance. We cannot at present enter into the question of the pros and cons of Freudianism, which, it is true, is based upon this universalized postulate of "psychological determinism"—the term being merely an especially powerful synonym for "independent psychical causation" as we have been defining it; but, in any case, the validity of the Freudian doctrine and method must be judged finally by its fruits, not *pre*judged by *a priori* criticism.

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Sidis, *Foundations,* Chaps. XV and XVI.

CHAPTER VII

The Subconscious

1. The Concept of the Subconscious.

98. *Meaning of the Term.*—The term "subconscious," disregarding all its deeper elaborations of meaning and all specific theories as to its nature, denotes *any form of psychical existence which underlies, but is not identical with, the personal consciousness.* That is to say, to call a phenomenon "subconscious" is to imply (1) that it is *psychical* rather than physical or physiological in its nature; (2) that personal consciousness is in some way dependent upon subconsciousness; but, (3) that the personality is not aware of that which is subconscious.

99. *The Place of the Concept in Modern Psychology.*—The psychology of the subconscious is a favorite and almost commonplace topic among popular writers, but the concept has been so abused and misunderstood by them that many psychologists reject it altogether. In view of this fact it is rather strange to find James writing in 1902 that "the subconscious self is nowadays a well-accredited psychological entity,"[1] and even Coriat asserting ten years later that "*all* psychopathologists agree . . . that our minds are made up of certain states for some of which we are conscious and for some not conscious."[2]

However, the criticisms that have been offered against the subconscious are after all properly of weight only against certain specific theories and interpretations of it, and not at all against the concept as such when rightly understood.[3] Cor-

[1] *The Varieties of Religious Experience,* p. 511.
[2] *Abnormal Psychology,* p. 10. Italics mine.
[3] *V.* Prince, *The Unconscious,* p. ix.

rectly interpreted, the concept is of fundamental importance to psychology.

100. *The Grounds for Postulating the Subconscious.*—Acceptance of the subconscious is based primarily and historically on theoretical grounds, but the theoretical demand has been confirmed by the observation of certain phenomena which seem to call for an explanation in subconscious terms. We recognize, therefore, a twofold root for the concept—(1) its basis as a *postulate,* and (2) its basis as an *inference* from observed phenomena.

(1) *Historically,* the concept of the subconscious was constructed to fulfill a *demand for continuity* in mental life, corresponding to that which characterizes the physical world (95). "It was early seen in the history of philosophy," says Bernard Hart, "that among the contrasts to be observed between the physical and the mental, one of the most prominent was the comparative discontinuity of the latter. The psychical life made its appearance in an irregular manner, in flashes of limited duration, and in the intervals between these flashes it appeared to altogether cease to exist. In contrast to this the material world seemed relatively continuous, permanent, and independent of the individual. Hence, if the study of the mind was to be brought into line with the rest of our knowledge, an attempt had to be made to get rid of the apparent discontinuity and irregularity of psychical experience."[4]

This discontinuity in mental life is observable in two different directions—(a) in the mental life of the individual, and (b) in the relation between individual minds. Concerning the former sufficient has already been said (89, 93, 95); but let us dwell for a moment on the contrast between mental and physical occurring under the second head.

[4] *Subconscious Phenomena,* p. 104. Leading representatives of this tendency in the history of philosophy have been Leibniz, Schopenhauer, Hartmann, Herbart, and Sir William Hamilton: opposed to them may be named Descartes, Lotze, and the English associationists. *V., Subconscious Phenomena,* pp. 105-107; Klemm's *History of Psychology,* pp. 172-181; and Villa's *Contemporary Psychology,* pp. 280-282.

It is perfectly possible for one human body to get in touch with another human body upon the terrestrial globe by passing over the intermediate physical space, or by communicating through such material media as the telephone wire or the postal service. In fact, it is even possible to imagine, if not to accomplish, passage from one planet or star to another through intermediate physical space, just as we actually observe the passage of light from the most distant stars to the earth. In all these transitions we are merely moving from one place to another in a single continuum. But if I wish to communicate a *thought* from my mind to that of my friend, I find it impossible to do so without making use of some physical medium—as the sound-waves of the voice, the light-waves produced by gesture or facial expression, etc. In other words, our physical *bodies* are parts of a great *physical continuum,* but our *minds* are not parts of any *psychical* continuum—not of any *conscious* one, at least.

It is because of the absence of any such conscious psychical continuum between minds corresponding to the physical continuum which subsists between bodies that some have suggested that there may be a *sub*conscious continuum between minds, as there is a submarine continuum between the various continents and islands on the surface of the earth.[5] Each conscious mind may be cut off entirely from every other, as every island on the earth is cut off from any land communication with other islands; but just as if we go beneath the surface of the ocean we find a continuous submarine land connecting these various islands, so if we pass beneath the threshold of consciousness we may find that all conscious minds are merely separate "islands" projecting out of a single subconscious continuum.

I merely introduce this speculation (for it is only a speculation) at this point in order to give our discussion a certain degree of completeness. The at least apparent discontinuity between minds calls for notice in passing, because it is one of

[5] *V.* James, *The Varieties of Religious Experience,* pp. 507-515.

the historic reasons for postulating some kind of a subconscious, but it is the discontinuity within the individual mind which alone demands our further attention.

(2) The second root of the concept of the subconscious is the *empirical* or observational root—the observation of certain *phenomena which seem to involve psychical activity,* and yet of which the subject is *not personally conscious.* The existence of such phenomena seems to call for some explanation of them in subconscious terms, and thus to offer empirical confirmation to the postulate which has been constructed historically on purely theoretical grounds. These phenomenal evidences of the subconscious I shall group under three heads, each group containing three chief varieties.

2. Evidences of the Subconscious.

101. *Group I. Phenomena involving Personal Continuity.* —The first group includes those phenomena which seem to indicate that the apparent discontinuity of mental life is merely superficial, and that underneath there is a real persisting self binding together the more or less discrete moments of consciousness. These phenomena are:—

(1) *The Sense of Personal Continuity*—the feeling that is in each of us, however we may differ in our explanation of it, that notwithstanding the gaps in the "stream of consciousness" produced by sleep, amnesia (periods of loss of memory), delirium, etc.—each of us is nevertheless the same person after waking up from sleep, or "coming to himself" after an attack of fever or amnesia, that he was before. I go to sleep at night, and for a time consciousness ceases; but when I awake I have no doubt that I am the same person I was the day before, and the first moment of waking attaches itself directly to the last moment before going to sleep.[6] So, notwithstanding the changes which occur in each of us as the years pass by from infancy to adulthood, we nevertheless feel ourselves to be the same person today that we were ten, twenty, or more years ago.

[6] *Cf.* James, *Principles of Psychology,* Vol. I, pp. 237-239.

These facts of consciousness seem to show that mental life is not merely an aggregate of several distinct "streams of consciousness" succeeding one another at intervals in time, but a single stream—disappearing periodically below the surface of the landscape, as it were, but nevertheless continuously one.

(2) *Recognition as a Factor in Memory.*—Memory, as the psychologist regards it, includes three essential factors, without any one of which we have no true memory at all. These three essential factors are retention, reproduction or recall,[7] and recognition. *Retention* is simply a name for the fact that an experience has so impressed itself upon the mind that it may be recalled at some future time—*i.e.,* retention is merely the potentiality of recall. *Recall* is the act of producing in consciousness an image ("memory-image") of some previous experience, and is often regarded as the essential feature of memory. This is not the case, however; for unless the memory-image with some perception or idea in one's own which *I myself* have had before, it is not true memory, but merely a form of reproductive imagery. The third factor, therefore,—*Recognition,* the conscious identification of a memory-image with some perception or idea in one's own past experience—is the essential distinguishing mark of true psychological memory.

Now, it is this recognition factor of memory which is adduced by advocates of the subconscious as evidence of the existence of a subconscious continuum connecting past and present consciousnesses in the lifetime of an individual. That I am able to produce in consciousness an image, more or less similar to some former image or perception in my past experience, is a conscious phenomenon, and may be accounted for in terms of consciousness; but that I should connect this present moment of conscious recollection with some past moment, perhaps many years ago, and recognize these two moments as parts of a single mental lifetime—as "mine,"

[7] Other synonyms are "revival" and "recollection."

rather than yours or his—seems to be an inexplicable fact unless there is some psychical continuum, a personal continuity, underlying and connecting the separate consciousness of those two moments.[8]

(3) *The Revival of Lost Memories.*—A third and especially striking type of phenomenon seeming to imply a subconscious continuum in mental life is the revival under abnormal circumstances—as in dreams, the deliria of fever, automatic writing, crystal gazing, hypnosis, waking hallucinations ("visions"), and the artificial devices of psychoanalysis —of experiences which have long been forgotten, and which no amount of conscious effort on the part of the subject has succeeded in bringing into the subject's consciousness.

The first four chapters of Dr. Prince's book on *The Unconscious* contain numerous instances of this phenomenon.[9] A classic example is that recorded by Coleridge of the illiterate servant-girl who, in a delirium, was heard uttering Latin, Greek, and Hebrew sentences. Later inquiry revealed that she had formerly been employed in the house of a scholarly clergyman who was accustomed to read aloud to himself Classic and Hebrew passages as he walked up and down the floor in the neighborhood of the kitchen.[10] The words, which of course were to the woman mere meaningless sounds, had penetrated her mind, and awaited only the stress of the fever to bring them back into consciousness. I say "back into consciousness," though in reality it is doubtful if they were *consciously* presented to her mind even in the first instance; rather were they *subconscious* impressions even then, and not so much forgotten or "lost" in the interval between the time of the original impression and that of the fever, as non-existent so far as the woman's normal consciousness was concerned at any time. But even should this phenomenon be ex-

[8] *V.* Sidis, *The Psychology of Suggestion,* pp. 124-127. *Foundations,* pp. 182 f.

[9] *Cf.* also Sidis, *Psychology of Suggestion,* Chap. XI.

[10] *V.* James, *Principles of Psychology,* Vol. I, p. 681.

plained in physiological terms, as a simple case of delayed reflex action, the innumerable instances in which definitely conscious experiences are known completely to drop out of consciousness for years, and are revived only under unusual stress at some later time, seem more naturally to call for a psychical than a physiological explanation.

102. *Group II. Phenomena having no Conscious Causes,* and therefore involving *sub*conscious causes if they are to be explained in purely psychological terms at all. These phenomena belong to each of the three aspects of consciousness which psychologists recognize in their structural analyses of mind—the *cognitive,* the *affective,* and the *conative;* and include, accordingly unaccountable *ideas,* unaccountable *feelings,* and unaccountable *acts.* If these conscious phenomena have no conscious causes, and yet are to be explained in psychical terms in accordance with the principle of independent psychical causation, their causes must be inferred to be subconscious.

(1) *Unaccountable Ideas.*—By this is meant the sudden appearance in consciousness of ideas which have no antecedents in consciousness—as when one forgets a perfectly familiar name or other word, searches for it in vain, although all the while it seems to be "just on the tip of the tongue," and finally gives up the search in despair, only to have the looked-for word rush into full consciousness some time after, when we are thinking of something else.[11] Frequently, also, strange ideas come into consciousness without any such preliminary effort, seeming to have no explanation at all; and yet the psychologist is loath to admit that any psychical phenomenon is inexplicable. Where do these ideas come from? Why did I think of this just at this time? These seem to be legitimate questions, and to demand a satisfactory answer.

In ordinary conversation, and in any sustained course of thinking, ideas follow one another easily, according to the familiar so-called "laws of successive association." At any time during the progress of such a "train of ideas," it is usu-

[11] *V.* Coriat, *Abnormal Psychology,* p. 22.

ally possible to stop and trace the series back step by step, perhaps to its origin. And so, when we are searching the memory for some temporarily forgotten incident, we approach our goal by way of associated ideas in the same manner as in the other instances referred to. The most natural explanation of "unaccountable ideas," then, would seem to be in similar psychical terms—of the nature in this case, however, of *sub*-conscious rather than conscious sequence of ideas.

(2) *Unaccountable Feelings, and Emotional States* having no apparent rational basis—as moods of depression or elation, personal likes and dislikes, fears and antipathies, moral and religious prejudices, etc. We cannot always explain why we wake up on one morning "with a grouch on," and on some other occasion in a particularly "good humor"; why we like certain people and dislike others; why we are afraid of cats, or have a special loathing for frogs; why one person considers playing tennis on Sunday a perfectly permissible occupation, and another regards it as a violation of the Sabbath.

These feelings are "unaccountable" in conscious terms, we cannot give our "reasons" for them; and yet there can be no doubt that every affective state has a cognitive basis somewhere. We say—"I do not like you, Dr. Fell: the reason why, I *cannot tell*"—but we do not say, "I have *no reason.*" The real reason, in other words, is subconscious.

(3) *Unaccountable Acts* of everyday life.—Of these, the most common instances are the so-called "slips of the tongue" or "of the pen": we intend to write or say one thing, and to our own surprise we discover ourselves saying or writing something quite different; or we may not make the discovery until long afterward, when someone else calls it to our attention. Nor is it uncommon to find ourselves doing things with our hands or feet without conscious intention—starting to walk in a given direction, and actually proceeding in some quite different one; going into an adjacent room to get a knife, for example, and finding when we have returned that we have brought back a pencil instead; and so on. Now, all

these actions are unaccountable in terms of consciousness, but no doubt can in every case be referred to a subconscious source.

103. *Group III. Phenomena apparently involving Intelligence.*—We come now to a group of phenomena of a quite different character from those already considered, in that they seem not only to call for a psychical explanation, but also actually to involve *reasoning* on the part of the subject. As heretofore, three types of phenomena are included under this head.

(1) *Solutions of Problems* which have been temporarily laid aside by consciousness. The solutions may manifest themselves in ordinary waking life, in the form of hallucinations, in dreams or hypnosis, through automatic writing, or in the crystal. Chapters VI and VII of Prince on *The Unconscious* are full of instances of this character, and I shall not attempt to reproduce any of them in this place. It is by no means uncommon for a student to work in vain upon some baffling problem, and to retire finally with the difficulty unsolved, and then to awake the next morning after a sound sleep with the solution clearly presented before his consciousness. A striking instance of a similar character is the dream of Professor Hilprecht, during which a problem in Assyriology was in a dramatic manner solved.[12]

Under the same head should be mentioned the rapid solution of mathematical problems by those strange anthropological freaks known as "lightning calculators"; and the "flashes of genius" of which F. W. H. Myers writes so fascinatingly in the third chapter of his *Human Personality*.[13] It is known that Sir W. R. Hamilton invented the abstruse mathematical system of quarternions "while walking with Lady Hamilton in the streets of Dublin, the flash of discovery coming to him just as he was approaching the Brougham Bridge."[14]

Now all these phenomena are of a distinctly and unescapably

[12] *Proceedings of the Society for Psychical Research*, Vol. XII, pp. 14 f.
[13] The chapter includes an account of some of the "lightning calculators."
[14] Jastrow, *The Subconscious*, p. 95.

psychical nature, involving not merely concepts or single ideas but actual reasoning, sometimes of a highly elaborate character. The reasoning itself, however, is not conscious but subconscious, and the solutions appear in consciousness as the end-products of a series of subconscious acts of reasoning.

(2) *Answers to Questions,* or solutions of simple problems set by some outsider, may be made by a hypnotized subject, or through automatic writing; the subject himself being quite unaware, so far as his waking consciousness is concerned, either of the question or of having made any reply to the same. For example, I may set the subject to reading aloud, place a pencil in his right hand, and then whisper in his right ear some simple arithmetical sum; and the subject may proceed to add up the figures quite unconsciously and automatically, while in no wise retarding or otherwise modifying his conscious reading.

(3) *Post-hypnotic Phenomena*—i.e., responses made after waking from an hypnotic trance, to suggestions made during hypnosis. The most striking variety of such reactions to suggestion are those which involve subconscious *time-appreciation—i.e.,* when the suggestion is made that the subject perform some action (as, "get up and shut the door") at a certain time (*e.g.,* a quarter past four), or after a given number of moments have elapsed (*e.g.,* 439 seconds after the subject has been awakened). In experiments of this kind it is quite surprising how accurately the subject will respond to the suggestion of time, and how carefully the subconscious calculates the interval between suggestion and reaction.[15]

3. Dissociation and the Coconscious.

104. *Meaning of the Terms.*—"If we are asked," writes Bernard Hart[16] "to turn our mental eye inwards and carefully observe at any given moment the content of our mind:—or,

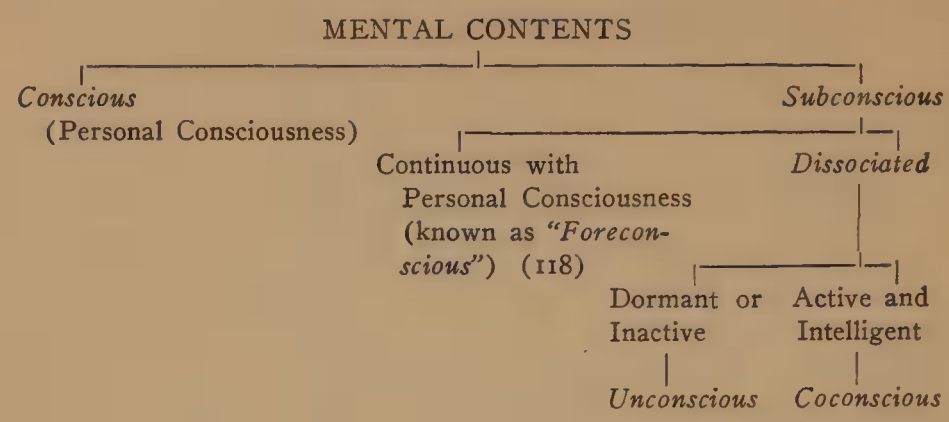
[15] Bramwell's *The Theory and Practice of Hypnotism* contains numerous cases of this kind.

[16] *The Psychology of Insanity,* pp. 40 f.

as it is technically termed, the momentary 'field of consciousness'—we should probably describe it as an indivisible whole, a uniform stream of thought progressing towards some definite end. . . . Yet this statement is only partially true of the normal mind, and it is hardly true at all of" the abnormal. In other words, a complete *Integration* of the various mental contents, in conformity with the above description, is the ideal, but hardly the normal, condition of the mind. In such a condition, every part of the subconscious field would be perfectly *continuous* with every part of the conscious field, so that any given content (idea or feeling) could pass freely from one field to the other—out of or into consciousness as needed. Usually, however, to say the least, and probably always as a matter of fact, some degree or other of *discontinuity* or *Dissociation* exists between the conscious and the subconscious fields.

Dissociation is a condition in which the mind seems to be divided, some of its contents being split off from the stream of personal consciousness, and leading a more or less independent existence beyond the control of the personality. When these dissociated contents become active, they are usually nowadays said to be *Coconscious,* and most of the phenomena of Group III, above noted (103), are manifestations of coconscious processes going on in a state of dissociation (*e.g.,* hypnosis). Subconscious contents which are inactive or dormant, and so do not come under the head of "coconscious," are usually called *Unconscious;* and the phenomena of Groups I and II are usually manifestations of *un*conscious rather than *co*conscious contents.[17]

[17] This division of subconscious phenomena into coconscious and unconscious we owe to Morton Prince (*v.* Coriat, *Abnormal Psychology,* p. 15-16, and note; Prince, *The Unconscious,* pp. x, 249-254.) Fuller consideration will be given to this distinction in the succeeding chapter (119). Meanwhile the table on following page may clarify our usage of the various terms in their relations to one another, though this does not always conform precisely to the usage of Dr. Prince.



105. *Examples of Dissociation.*—A curious contradiction is found in Coriat's *Abnormal Psychology.* On page 4 the author states that "dissociation is a pathological phenomenon," and yet on page 33 we find him declaring that "dissociation remains normal so long as it is transitory." The latter of these two statements is undoubtedly more true to the facts, and ten pages of the book under consideration are devoted to illustrations of the dissociations of everyday life.[18]

Common examples of dissociation in everyday *waking* life are the sudden forgetting of a name, of the topic of a conversation, or of the intention of an action;[19] slips of the tongue or pen; etc. In all these cases, the name, topic, purpose, or other datum has become dissociated from the personal consciousness, and the subject is at a loss what to do or say next.

Dreams are dissociation phenomena occurring normally during sleep. It is likely that most of our dreams are completely forgotten—*i.e.,* "unconscious," in the sense above distinguished; though some of them are synthetized with consciousness after waking. *Absentmindedness* is a typical dissociation-psychosis, in which the entire mental field, with the exception of that portion thereof on which "the attention" is concentrated, is split off from the personal consciousness. In such

[18] Pp. 22-32.

[19] *E.g.,* going into a room for a definite purpose, and then forgetting why we are there.

a condition, special opportunity is open for the manifestation of subconscious phenomena.[20]

Pathological dissociations differ from these in their *depth* and *duration.* The ordinary non-pathological types of dissociation are superficial and transitory—they do not produce a very deep cleft in the mental field, and they last but a short time: when the dissociation is prolonged and the phenomena consequent thereupon exaggerated, it becomes pathological, or at least abnormal.[21] The most striking examples of these are the hypnotic state, the "somnambulisms" of hysterics, and the various trance states of neurotics and insane persons. In these conditions the subject may be leading a very active psychical life, and yet in his normal state may be quite ignorant of the events occurring during the trance.

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Hart, *The Psychology of Insanity,* Chap. IV.
Wells, *Mental Adjustments,* Chap. V.

[20] Coriat's "chocolate pie case" is a good example of this. *Op. cit.,* p. 43.
[21] *Op. cit.,* p. 33. *Cf.* Hart, *The Psychology of Insanity,* p. 43.

CHAPTER VIII

Theories of the Subconscious

1. *Types of Theory.*

106. *The Main Problem* with regard to the explanation of the phenomena described in the last chapter is as to whether they should be interpreted as *psychical* or *physiological* in their nature. Of the six theories propounded in the introduction to the volume entitled *Subconscious Phenomena,*[1] and reviewed by Coriat on pp. 11-13 of his *Abnormal Psychology,* five are psychological explanations and one (that defended in *Subconscious Phenomena* by Münsterberg, Ribot, and Jastrow, and the fifth in Coriat's list) a physiological one. Advocates of a physiological explanation reject the concept of the subconscious altogether—chiefly, however, on the basis of arguments which are of real weight only when directed against one special form of the subconscious theory.

The dominating question becomes, then, this: Are the phenomena called subconscious really manifestations of *Subconscious Mentation—i.e.,* psychical, but not conscious; or are they merely expressions of *Unconscious Cerebration—i.e.,* of brain processes entirely unaccompanied by any psychical activity? In the remainder of this division of the present chapter we shall consider two psychological views of the subconscious, and in succeeding divisions shall give our attention to a more critical study of the subconscious, defending it in the proper place against the attacks of the unconscious cerebrationists.[2]

[1] Originally, in the *Journal of Abnormal Psychology,* Vol. II, No. 1 (1907).

[2] It should be kept in mind that the very term "subconscious" involves "mentation" or psychical activity. The issue is not between psychological and physiological theories "of the subconscious," but between psychologi-

107. *The Dual Mind Theory.*—The popular conception of the subconscious is that of a separate "secondary" or subconscious "self" or "mind," having all the reality of the "primary" or conscious mind, but living an independent life alongside of it. According to this view, man has two minds, one conscious and the other subconscious, sharply separated from each other but interacting.[3]

This theory was promulgated by T. J. Hudson some twenty-five or thirty years ago in his book, *The Law of Psychic Phenomena*—no doubt one of the most popular books on psychology ever written, and yet one having no scientific standing whatever. The two minds Hudson calls the "objective" and "subjective" minds respectively, and to each of these minds he ascribes distinct "faculties" or powers. The "objective mind," he asserts, is that by which we become aware of the objective world through the mediation of the physical senses: the "subjective mind," on the other hand, "takes cognizance of its environment by means independent of the physical senses"—namely, by "intuition," whatever that may mean. This "subjective" or subconscious mind is "the seat of the emotions and the storehouse of memory," "is constantly amenable to the power of suggestion," and has unlimited powers of deductive inference, but is quite "incapable of inductive reasoning." The "objective" or conscious mind, on the other hand, "is capable of reasoning by all methods," but is not controllable by suggestion.

Such a view of the mind undoubtedly simplifies many problems—or would, if there were any truth in it—but, unfortunately for its advocates, it also introduces many new problems which would be quite insoluble on its own basis, and is totally indefensible from a scientific standpoint.[4] Any such artificial

cal and physiological explanations of the phenomena described in the previous chapter, and called, by those who explain them psychologically, "subconscious."

[3] *V. Subconscious Phenomena,* pp. 12 f. Münsterberg—*Psychotherapy,* pp. 126-129.

[4] Coriat, however, strangely enough, would give the unguarded reader

division of the mind is open to all the objections offered to the historic "faculty theory" (11), and is thoroughly unscientific, all psychologists today agreeing that, normally at least, the mind is a unit, and that man has in any case but one mind. Because of the misconceptions associated with this, the most widely held theory of the subconscious, the term "subconscious mind," which is perfectly defensible when understood as meaning the subconscious *portion* of the mind's content, should nevertheless ordinarily be avoided, and the single word "subconscious" substituted.

108. *The Ultra-Marginal View of the Subconscious.*—The best approach to an understanding of the nature of the subconscious is, I think, from the point of view which regards the subconscious as a field of mental activity outside the margin of personal consciousness. This conception I denominate the "ultra-marginal *view*" rather than "theory" for the express purpose of counteracting any tendency to regard this conception as in any way an *explanation*—certainly not a *final* theory—of the subconscious: it is a *descriptive* conception solely, a method of approach to an understanding of the subconscious, and in no sense an explanatory theory. Furthermore, the view of the subconscious which I shall present in this section does not pretend to be a *complete* description of what we mean by the subconscious, but merely an "approach" to such a description; for the subconscious is much more that the ultra-marginal. Succeeding divisions of the chapter, however, will elaborate what is here merely preliminary.[5]

to understand, quite unjustifiably, that the dual mind theory is the dominating view among psychologists, when he tells us on p. 3 of his *Abnormal Psychology* that "the psychologist [*i.e.*, *every* psychologist] regards the subconscious as an independent consciousness, coexistent with the healthy consciousness [does he mean to imply by this word "healthy" that the "subconscious mind" is pathological?] but detached from it." This is, of course, a very unfortunate way of putting the matter.

[5] The best presentation of the ultra-marginal view is to be found in Prince, *The Unconscious*, pp. 340-352. (*Cf.* also Coriat's first theory—*Abnormal Psychology*, p. 11; also, *Subconscious Phenomena*, p. 10. This

General psychology recognizes that the field of personal consciousness at any one moment is not identical with the field of attention. As Dr. Prince puts it: "If you were to state what was in your mind at a given moment, it is the vivid elements upon which your attention was focused, that you would describe. But as everyone knows, these do not constitute the whole field of consciousness at any given moment. Besides these there is in the background of the mind, outside the focus, *a conscious margin or fringe* of varying extent (*consisting of sensations, perceptions, and even thoughts*) *of which you are only dimly aware.* It is a sort of twilight zone in which the contents are so slightly illuminated by awareness as to be scarcely recognizable."[6]

The field of consciousness at any one moment, therefore, contains two more or less clearly distinguished regions—(1) a *central* or focal region of *attention* or clearest consciousness, and (2) a surrounding *marginal* or *subattentive* region of less clear contents. The latter was called by James the "fringe" of consciousness, to indicate its less solid, more hazy character, and that the total field of consciousness is frayed out at the edges, so to speak, rather than of equal consistency throughout. This distinction within the field of consciousness is analogous to that made by all psychologists between the central, "focal" portion of the field of vision—the region of *clearest* vision—and the marginal or "peripheral" region.

Now the *subconscious* is to be thought of primarily as the further extension of this fringe into what may be called (3) the *ultra-marginal* region, containing a number of instable contents, any of which may at any moment, under normal conditions, come into actual consciousness. From this point of view, the subconscious is the *potentially conscious,* and does not, normally at least, constitute a "self" distinct from the conscious self. The following diagram, a modification of a

treatment, however, ignores the very important distinction between marginal and ultra-marginal—*v., inf.,* sect. 113.)

[6] *The Unconscious,* p. 341.

common form of graphic representation of the field of consciousness, may help to clarify these distinctions.[7]

THE FIELD OF MENTAL CONTENT

1. *Central* Region: *Attentive* Consciousness.
2. *Marginal* Region: *Subattentive* Consciousness.
3. *Ultra-Marginal* Region: *Subconsciousness.*

Absentmindedness, it is interesting to point out in this connection (*cf.* 105), is a condition in which the field of consciousness is narrowed down to that of attention, and all other contents beside those attended to are entirely subconscious. Such a state may be represented as follows—

—circle 2 being absent.

Prince summarizes his presentation in these words: "If all that I have said is true, it follows that the *whole content or field of mind*[8] *at any given moment includes not only considerably more than that which is within the field of attention, but*

[7] The lines between circles 1 and 2, and 2 and 3, are dotted to indicate that normally contents may pass more or less freely from one portion of the general field to another.

[8] Prince uses here the word "consciousness," and for what we have called "personal consciousness" he uses the term "awareness." I prefer, however, in the interests of clearness and simplicity not to distinguish "awareness" from "consciousness," but to use these terms interchangeably.

more than is within the field of personal consciousness.[9] The field of conscious states as a whole comprises the focus of attention plus the marginal fringe; and besides this there may be a true subconscious ultra-marginal field comprising psychical[10] states of which the personal consciousness is not even dimly aware."[11]

109. *The Subconscious as the Subliminal.*—In addition to the metaphor which speaks of the subconscious as that which is "beyond the margin of consciousness, it may also be viewed as that which lies "below the threshold" of consciousness—*i.e.,* as that which is "subliminal."[12] In contrast to this, the personal consciousness is "supraliminal," or "above the threshold." This is a terminology which extends the familiar psychophysical concept of the psychic threshold or "limen"[13] to the field of subconscious psychology. It is a terminology made familiar especially by Myers,[14] but not so much favored at the present time. The whole field of mental content was likened by Dr. Stanley Hall to an iceberg, of which only a small portion is visible above the surface of the water: in the same way, it is said, only a small portion of the mental content is above the threshold of consciousness.[15] Any given content, moreover, may at any time (under given conditions) "rise above" or "fall below" this threshold, as a swimmer or a

[9] Prince uses here the word "awareness." But see previous note.

[10] Prince uses the term "conscious" here.

[11] *The Unconscious,* p. 351.

[12] *Sub limine,* "under the threshold."

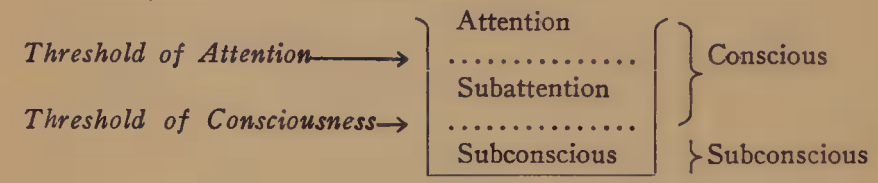
[13] In psychophysics, a stimulus (of sound, for example) which is too faint to be perceived is said to be "below the threshold of consciousness," and one which is just intense enough to be perceived and no more is said to be "at the threshold."

[14] *Human Personality.*

[15] Myers' own favorite analogy was that of the spectrum of light, consciousness corresponding to the visible portion, and subconscious processes to the potent but invisible ultra-violet rays.

submarine may rise above or fall below the surface of the water at will.[16]

All these figurative representations of the subconscious are useful for clearing up our understanding of the matter, provided we do not allow ourselves to be carried away by them. Generally speaking, we may regard the ultra-marginal form of speech as involving a view of the mind from above, and the subliminal figure as a cross-section of the mind. The latter may be graphically represented as below, using what I shall hereafter designate the "Reservoir Figure" of the subconscious.[17]



2. *Criticisms of the Concept of the Subconscious.*

110. *The Subconscious and its Critics.*—Most psychologists are willing to accept the *coconscious,* and explain the phenomena of our third group (103) as expressions of such dissociated or coconscious activity;[18] but many refuse to accept the broader concept of the *subconscious* as applied to the phenomena of Groups I and II (101, 102), and explain all these in *physiological* terms (the theory of "unconscious cerebration," *inf.*). Among these, the most prominent are probably Hugo Münsterberg, Theodore Ribot, and Joseph Jastrow. I

[16] As it is important to guard ourselves in the use of the expression "subconscious mind," so it is highly advisable to avoid entirely the use of the term "subliminal self."

[17] The other representation may be called the "Circle Figure." Of course, if we were considering the mathematical proportion of the various parts of the psychical field, our reservoir figure would not have parallel sides, but sides which would slope inward in passing up from the bottom. But such details must be ignored in our present study.

[18] *E.g.,* Münsterberg—*Psychotherapy,* pp. 155 f.

shall follow Münsterberg's criticisms in my presentation of this viewpoint.

Münsterberg opens his discussion of the subconscious in his *Psychotherapy* with the sentence—"The story of the subconscious mind can be told in three words: there is none." Of course, such a summary method of rejecting a proposition in which one disbelieves by merely asserting its contradictory, can never carry conviction to those one most wishes to convince. Fortunately, however, for those who have a serious interest in understanding both sides of an issue, the author at once proceeds to admit that it needs "many more words to make clear what that means," and follows this admission by thirty-two pages of valuable criticism. The objections offered may be considered under three heads, as follows:

111. (1) The notion of "subconscious mental facts" is *self-contradictory*. What is not conscious is not mental at all, but physiological. So-called "subconscious mental facts are either not mental but physiological, or mental but not subconscious";[19] for "to have psychical existence at all means to be object of awareness for a consciousness."[20] Therefore, "psychical objects which have their existence below consciousness are as impossible as a wooden piece of iron."[21]

The issue here is between those who identify "mind" and "consciousness," and those who allow for a possible differentiation between them—making "mind" a more inclusive term than "consciousness," according to the "iceberg" principle above elucidated (109), and others of that nature. The former view is well represented by Mark Baldwin, who asserts that "consciousness is the one condition and abiding characteristic of mental states."[22] And again—"Consciousness is the common and necessary form of all mental states: without it mind is not and cannot be conceived. It is the point of di-

[19] *Psychotherapy*, p. 130.
[20] *Ibid.*, p. 133.
[21] *Ibid.*, p. 134.
[22] *Handbook of Psychology*, Vol. I (*Senses and Intellect*), p. 45.

vision and differentiation between mind and not-mind."[23] The opposite view is expressed in Coriat's exaggerated statement that "all [*sic*] psychopathologists agree . . . that our minds are made up of certain states, for some of which we are conscious and for some not conscious."[24]

But, after all, this issue is one of fact rather than of theory. If the evidence of subconscious mental processes—of processes going on in the organism which are psychical in their nature, but of which the personality is unaware—is strong enough to be convincing, we must alter our notion of "mind" to make it include these new facts; only taking care, of course, that we do not allow ourselves to fall into real contradition. But when the subconscious is thought of from the ultra-marginal point of view, and defended as we have done from the beginning, this first objection loses weight. For, according to the ultra-marginal view, "subconscious" does not mean "not conscious in any sense of that word," but merely "outside the margin of *personal* consciousness." The concept is not opposed to that of "consciousness," as a general term for mental activity, but to that of "*personal* consciousness"—of awareness by the personality, whatever philosophers may define that to be. In order to avoid all ambiguity, however, I prefer for the present, at least,[25] to restrict the term "consciousness" to "personal consciousness," and to use "mind" or "mental content" in the broader sense (*v.*, footnote at end of section 104). The expression 'subconscious mental facts," then, is self-contradictory only if we arbitrarily and before examining the evidence identify "mind" and "*personal* consciousness," and then refuse to alter our ideas in the face of disturbing facts.

[23] *Handbook of Psychology*, Vol. I, p. 44.

[24] *Abnormal Psychology*, p. 10. Just above this quotation, the author has naïvely classed those who regard "unconscious mental facts" as a "contradiction in terms" among the psychologists "who have not had experience in investigating abnormal mental phenomena"! This is as bad as Münsterberg's brief condemnation of the whole notion of the subconscious in three words!

[25] But *v.* also sect. 120, where another terminology is suggested for final adoption.

112. (2) The hypothesis of subconscious ideas is *futile.*

This objection follows from and is inextricably bound up with Münsterberg's views of psychical causation and his criticism of the independence theory (89 (3)). He maintains, it will be remembered, that mental facts, being purely transitory and discontinuous, have no causal connection, but only a teleological one. But, he adds, if mental facts *qua* mental have no causal connection, it would be useless to try to fill up the gaps in the series of *conscious* ideas by the introduction of purely hypothetical *sub*conscious ideas.[26] Or, to put it in another way: mental facts are, by their very nature *as* mental, discontinuous—*i.e.,* lack causal connection; conscious facts, then, *being* mental, lack causal connection; therefore, even if we concede that *sub*conscious mental facts are possible, they, too would lack causal connection—not because they are subconscious, but because they are mental, and nothing mental has causal connection. Hence, the postulation of subconscious mental causes would be futile and fruitless.

By parity of reasoning, however, if we *accept* the principle of independent psychical causation on general grounds, as we have decided to do, then acceptance of the subconscious necessarily follows. If we find it possible to admit "causal connection" between conscious processes (*conscious* causes), then we need have no hesitation in admitting it between subconscious processes, or between conscious *and* subconscious processes (*sub*conscious causes). For advocates of independent psychical causation, then, the hypothesis of subconscious ideas is not futile, but actually necessary.

113. (3) The concept of the subconscious is *gratuitous,* and so unnecessary, since all the phenomena may be sufficiently explained without it. For the purpose of such explanation, Münsterberg in effect classifies the phenomena in three groups, which, to distinguish this classification from our earlier one (101-103), I shall designate by letters:

[26] *Psychotherapy,* pp. 138 f.

A. *Coconscious* processes—active and intelligent processes, which are, however, *dissociated from the personality.*

B. *"Mental,* but not subconscious," processes—mental contents which are *outside the field of attention,* but *inside* the field of *consciousness.*

C. "Not mental, but *physiological,"* processes—phenomena which may be explained on the theory of *unconscious cerebration.*

The phenomena of Group A have already received sufficient attention from us, and we have treated the "coconscious" as a species of the broader genus "subconscious." The theory of unconscious cerebration, adduced in explanation of the phenomena of Group C, will occupy our thought in the next succeeding division of this chapter. Further consideration must be given at this point, however, to the phenomena of Group B.

"There are," says Münsterberg, "plenty of mental experiences which we do not notice, or which we do not recognize. Yet if we do find later that they must have influenced our mind, we are easily inclined to refer them to subconscious activity. But it is evident that to be content of consciousness means not at all necessarily to be object of attention or object of recognition. Awareness does not involve interest [*i.e.,* 'consciousness' includes more than 'attention'—*viz.,* the 'subattentive margin']. If I hear a musical sound, I may not recognize at all the overtones which are contained in it. As soon as I take resonators and by them reënforce the loudness of those tones, they become vivid for me and I can now notice them well even when the resonators are removed. I surely was aware of them—that is, had them in consciousness—all the time, but there were no contrast feelings and no associations in consciousness which gave them sufficient clearness to attract attention."[27] Again, in walking along the street I may suddenly think of some person, and later discover that I had actually, a few moments before the thought "came into my mind," passed him without noticing or recognizing him.

[27] *Psychotherapy,* pp. 158 f.

Now it is evident that what impels Münsterberg to call such experiences as these "mental indeed, but not subconscious," is the fact that he rejects the distinction we have made between the "subconscious" and the "subattentive" (108). These experiences, he avers, are outside the field of attention it is true; but if they are mental at all, as they certainly must be, and if the mental and the conscious are identical, as Münsterberg all along presupposes and insists, then they must lie within the field of consciousness. But to refuse to call these phenomena subconscious is merely a question of terms, and reduces back to the question as to whether two subdivisions of the field of mentality are sufficient to account for all the facts, or whether a threefold division is necessary. Münsterberg identifies "mind" and "consciousness," dividing the field into an (attentive) centre and a (subattentive) margin, and including in the latter what we have called "subconscious": advocates of the subconscious, in the other hand, distinguish "mind" from "consciousness," dividing the total field of mental content into three concentric regions, and distinguishing the subconscious from the subattentive. The justification for the latter distinction, which Münsterberg rejects, lies in the fact that investigation seems to show that there *is* a real difference between being subattentively aware of a certain fact, and being subconscious of it.

For example, when attending an orchestral concert, I am *conscious* of the total volume of sound, of the lights and the appearances of the players and the portions of the audience within my field of vision, perhaps of the hardness of the seat on which I am sitting and the closeness of the atmosphere; though very likely my *attention* is concentrated upon the tones produced by whichever may be the dominating instruments of the moment—violins, oboe, kettledrums, or what not—and all the rest of the content of my consciousness is in the subattentive region. But over and above all this there will be a vast number of phenomena going on of which I am totally "unconscious" so far as *"I"* (my personality) am concerned, and

yet of which I may easily become conscious under the proper conditions—the portion of the audience outside my momentary field of vision, of which I may at any time *think,* even if I do not look at them; the feeling of my clothing, the pressure of my feet on the floor, a pain in my left forefinger; ideas of music in general, of the composer of the symphony being played, of philosophy, or of domestic events, etc. So long as I am not conscious of these things, and yet may become conscious of them as soon as the required conditions arise, they have a claim to be called in some sense "mine"; and it is to such phenomena as these that the terms "subconscious," "subliminal," and "ultra-marginal" are applicable.

In the case of a single musical sound, of which Münsterberg writes,[28] I should deny what he implicitly, but probably unintentionally, asserts—*viz.,* that we are *attentively* conscious of the fundamental tone only, and *subattentively* of the overtones. Rather, are we attentively conscious of the entire "clang"[29] as a unit, and only the trained musician is even *subattentively* conscious of the various partial tones as such, the ordinary hearer who knows nothing of the science of music being but *subconscious* of them.

So, in the instance of unconsciously passing a friend on the street, I may at the time have been vividly aware of some other person who was momentarily obstructing my passage, and subattentively conscious of the store windows along the side of the walk; and immediately afterward the order of vividness may have been reversed, the store windows and their contents becoming focal and the passers-by marginal, the thought of my friend bring entirely "beyond the margin" until a still later time. And yet the fact that I *did* pass him, and that the light reflected from him stimulated my optic nerve even if it did not penetrate my consciousness, requires me to admit that I was subconscious of him all along.

[28] *Psychotherapy,* pp. 158 f.

[29] The technical term for the complete musical tone, which the musician analyzes into fundamental and overtones.

The distinction between the subattentive and the subconscious which Münsterberg ignores should, therefore, I think, be recognized; and if so, the phenomena which our critic explains as "mental but not subconscious" (Group B) must—some of them, at least—be classified as ultra-marginal.

3. *The Theory of Unconscious Cerebration.*

114. *The Cerebral Explanation of the So-called Subconscious Phenomena* is a natural application of the general cerebral theory of psychical causation to the particular facts now under investigation. The theory and the term "unconscious cerebration" we owe primarily to Wm. B. Carpenter.[30] Advocates of this theory explain all phenomena which are neither coconscious (Group A) nor subattentive in the sense of which we have just been speaking (Group B)—namely, those of Münsterberg's Group C—as expressions of brain activities, entirely unaccompanied by mental activity (cerebration, rather than mentation).

The great test of theories of the subconscious is the *problem of memory.* What are the conditions that make it possible to reproduce earlier sensory experiences in terms of memory-images? The usual explanation is that every sensory experience leaves some modification in the neurones of the brain—"physiological dispositions," as they are sometimes called; and that memory in its reproductive stage (101(2)) is the conscious accompaniment of renewed activities in those same neurones. This is the explanation adopted by those who defend cerebral theories of psychical causation.[31] Advocates of the subconscious, on the other hand, assert the existence of *psychical* dispositions also in the subconscious region itself, as the source of the revived memory-image, and as the psychical correlates of the dispositions in the brain cells. This is in conformity with the general "principle of independence"

[30] *Principles of Mental Physiology* (1874).
[31] *E.g.,* Münsterberg—*Psychotherapy,* p. 138.

(86(2)), which demands a psychical cause for all mental processes.

To the theory of psychical dispositions, Münsterberg offers what can only be called an absurd objection, and one which it is difficult to take seriously. "If we really needed a mental disposition for each memory picture, in addition to the physiological disposition of the brain cells," he asks, "can we overlook that exactly the same thing would then be necessary for every *perception* also? The outer impression produces, perhaps through eye or ear or skin, an excitement of the brain cells, and this excitement is accompanied by a sensation; and no one fancies that the appearance of this sensation is dependent upon a special disposition for it on the mental side."[32] "I hear the bells ringing. The sounds enter my consciousness. Must I suppose that I have a subconscious disposition for these bell sounds, and even for this new melody of the bells which I have never heard before? Of course, then, I must have such a disposition for everything on earth which can enter into the sphere of my senses. I must have a disposition for the smell of the chemical substance which some chemist may produce tomorrow in his laboratory. All those dispositions resulting from my little personal experiences, which are postulated by advocates of the subconscious in explanation of memory, are, then, insignificant compared with the trillions for all which may possibly become the object of my sense-perception."[33]

It is indeed difficult to take this criticism seriously. Memory-images by their very nature have psychical antecedents: it never occurs to us to call an experience memory unless it is a reproduction of some previous conscious experience, and the theory of psychical dispositions is just an attempt to tide over the interval between the original and reproduced experiences by means of psychological rather than physiological concepts. Perception, on the contrary,—at least, on its sensory side—is an original primary fact of mental life, having no psychical

[32] *Psychotherapy*, pp. 139 f. Italics mine.
[33] *Psychology General and Applied*, pp. 27 f.

antecedents whatever (94(2)). Only the doctrine of universal psychophysical parallelism (94(3)) calls for such an explanation of perception as that which Münsterberg criticizes; and this is a metaphysical, not a scientific, doctrine.

115. *Criticism of the Theory of Unconscious Cerebration.*— Three criticisms of the cerebral explanation of the so-called subconscious phenomena may be offered—

(1) The *cerebral theory of memory,* as outlined above, applies only to retention and recall, and *fails to explain recognition.* This difficulty has already been discussed at length, and need hardly delay us again now.[84]

(2) The theory of unconscious cerebration *fails to account for the intelligent character* of many of those phenomena in which no definite "coconscious" activity or "dissociation" is observable.

Though accepting the concept of the coconscious, Münsterberg inclines to regard the phenomena of our Group III as explicable physiologically as merely highly complex reflex activity, connected "by continuous transitions" with the "simplest automatic reactions." "In the simple cases," he says, "of course no one doubts that a purely physiological basis is involved. The decapitated frog rubs its skin where it is touched with a drop of muriatic acid in a way which is ordinarily referred to the trained apparatus of his spinal cord, as no brain is left, and the usefulness of the action and its adjustment is very well understood as the result of the connecting paths in the nervous system. From such simple adjustments of reactions of the spinal cord, we come step by step to the more complex activities of the subcortical brain centres, and finally to those which are evidently only short-cuts of the higher brain processes."[85] All these, however, even the most complex, and those which involve reasoning, he regards as perfectly explicable in physiological terms.

It is always difficult to know where to draw the line between

[84] *V.*, sect. 101(2), and references.

[85] *Psychotherapy,* p. 143.

that which does and that which does not involve rational intelligence, but that the line must be drawn somewhere is indubitable. And the phenomena referred to under Group III (103) seem to be of the type which can only be accounted for on the ground of rational intelligence—and if not conscious, then subconscious, intelligence. Even, then, if unconscious cerebration will account for the phenomena of Groups I and II, it fails entirely to account for those of Group III.

(3) Our final objection, however, is one which applies to the theory of unconscious cerebration in its broadest significance, and is the natural consequence of our general principles of independence and of independent psychical causation. This objection is that the theory of unconscious cerebration *confuses the psychical with the physiological.* However plausible this theory may be in itself, if we have no prepossessions as to the independence of psychology from physiology, nevertheless, if we are to have, in accordance with our postulates, a purely psychical explanation of all psychical phenomena, the concept of the subconscious is a necessary one. Münsterberg, of course, rejects the whole idea of an independent causal psychology, and so does not need (except, as I should insist, in explanation of the phenomena of Group III) the concept of the subconscious: we, on the contrary, who are attempting to lay the foundations of an independent causal psychology, find the postulation of that concept essential.

In conclusion, my criticism of the theory of unconscious cerebration and defence of that of subconscious mentation may be summed up in two propositions: (1) The phenomena of Group III are by their very nature inexplicable in purely physiological terms, and therefore call for an explanation in terms of subconscious mentation—this is the *empirical* defence of the principle of subconscious mentation. (2) The postulate of independent psychical causation forbids reference of any psychical phenomenon to a cerebral cause, and demands its explanation in purely psychical terms—this is the *theoretical* defence of the principle of subconscious mentation. In view of

this latter basis for our doctrine, the chief purpose of this and the preceding chapter has up to this point been not so much to prove empirically that subconscious mentation goes on, as to show that the concept of the subconscious thus called for on theoretical grounds is reasonable; the empirical proof being a confirmation of the postulate, rather than an independent demonstration.

116. *Consciousness and Content.*—One paragraph in Münsterberg's chapter in the *Psychotherapy* calls for special comment at this point, although its subject-matter is hardly pertinent to that of the chapter as a whole. I refer to that paragraph in which the author distinguishes between consciousness and content.[36]

"Consciousness," he writes, "is an inactive spectator [of] the procession of its contents." "Consciousness itself cannot change anything in the content, nor can it connect the contents. No other function is left to [it] but merely that of awareness."

The only criticism I should care to make of this description would be directed against the use of the term "inactive." By its very nature, even when merely a "spectator" (as in perception or reproductive imagery), *consciousness is always active:* there is no such thing possible as a purely passive state of consciousness. But if the word "inefficient" is substituted for "inactive," this objection is compensated. Consciousness is indeed an *inefficient* spectator of the procession of its contents, in the sense that consciousness is never a *cause* producing its effects. One content may be the cause of another, and all may be the expressions of the metaphysical self, but consciousness, as psychologists study it, is never a cause but an effectless spectator of these contents.

Dr. Sidis, however, would not be satisfied with this single criticism. He thinks that Münsterberg is in this paragraph reviving the old *substance* view of consciousness. "Consciousness," he says, "is regarded in the light of a substance which contains the mental content somewhat after the fashion of a

[36] Paragraph beginning on page 134.

material substance underlying physical qualities."[37] But this, surely, is a false interpretation. For Münsterberg, consciousness is not in any sense a substance, but rather a *subject,* as the very expression "spectator of the contents" implies. This phase of his doctrine follows naturally from his general conception of scientific psychology, according to which the "consciousness" that psychologists study and analyze is an artificial construction, not the "real self"—an objective treatment of what is in its true nature subjective. Sidis, indeed, criticizes this latter view also,[38] but we cannot return to this point now.

4. *Recent Developments in the Theory of the Subconscious.*

117. *Freud and Prince.*—Two contemporary writers have propounded theories which involve the division of the subconscious into regions, somewhat after the fashion of the usual division of the field of consciousness into focus and margin. These psychologists are Drs. Sigmund Freud of Vienna, and Morton Prince of Boston. The divisions they propose are quite different, and each must occupy some of our attention.

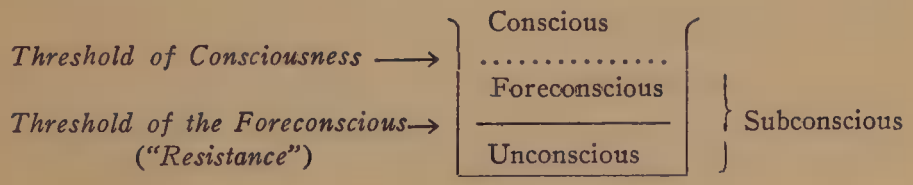
118. *Freud's Theory of the Subconscious.*—Freud divides the subconscious into two "levels," as we may call them—(1) an upper level designated the *"foreconscious"* (sometimes translated "preconscious"), and (2) a lower level known as the *"unconscious."* The chief distinction between them is this: the Foreconscious is made up of contents which may become conscious at any time on attaining a certain degree of intensity, whereas the Unconscious is made up of contents which cannot enter into consciousness except by overcoming a certain "resistance." Foreconscious contents are subject to voluntary recall: unconscious contents can be recalled only by the use of certain artificial devices known as "psychoanalytic." The Foreconscious is the "ultra-marginal": the Unconscious is a deeper stratum of the "psyche" (*i.e.,* the total mental con-

[37] *Foundations,* p. 194.

[38] *Ibid.,* pp. 195 f. See also our sect. 124.

tent), whose contents can rise into consciousness only by passing first through the foreconscious level, the latter acting as a "screen" between Conscious and Unconscious.[89]

The Unconscious, according to Freud, is the "real self," whose inner nature is unknown to us, and is only imperfectly revealed to us in consciousness. It is made up, he teaches, of memories, thoughts, desires, etc., which have been "repressed" because they are for one reason or another painful to consciousness, or contrary to the higher moral nature; the result being that a certain "resistance" is set up against their recall into consciousness, which can be overcome only by special methods. This particular hypothesis with regard to the nature and content of the Unconscious Freud infers from the phenomena of hysteria, hypnosis, dreams, etc., which have long occupied his attention: it is, therefore, an extremely important hypothesis for abnormal psychology, but its details are of no interest to us in our present purely theoretical investigation. Our sole immediate concern is with the general division of the field of the subconscious which Freud has suggested. This may be symbolized by the following modification of our earlier "Reservoir Figure" (109)—



(The ease with which foreconscious contents can rise into consciousness is indicated by the dotted line representing the threshold of consciousness, and the difficulty with which unconscious contents become foreconscious is indicated by the solid line representing the threshold of the foreconscious.)

119. *Prince's Theory of the Subconscious.*—Reference has already been made (104) to Prince's division of the subconscious into the Coconscious and the Unconscious. His use of the latter term, however, is quite different from that of Freud

[89] *V.* especially, *The Interpretation of Dreams,* pp. 429, 488.

(120). According to Prince, the Coconscious is made up of active, intelligent processes, coëxisting with, but dissociated from, the personality; the Unconscious is composed of traces of previous conscious processes in the *neurones of the brain.*[40] The Coconscious, therefore, is a *psychological* concept, the Unconscious a *physiological* one, in Prince's system; this, consequently, being a kind of compromise between the two usual theories—that of Subconscious Mentation and that of Unconscious Cerebration.

The distinctive feature of Prince's physiological conception of the Unconscious is his *theory of neurograms.* Every mental experience, as all physiological psychologists admit (114), leaves traces or residua ("dispositions") in the neurones of the brain. But as every such experience involves, not merely a single neurone, but a number of distinct but related neurones, this "brain record" is a complex and highly organized one in each case—a "brain *pattern.*" These organized residua or brain patterns, Prince calls *Neurograms,* and these neurograms have the same relation to ideas that a phonogram (phonograph record) has to the voice which produces and is produced by it.[41] The Unconscious as a whole, then, is "the great storehouse of neurograms, which are the physiological records of our mental lives."[42]

120. *Comparison and Suggested Modification of Freud's and Prince's Theories.*—The chief differences between Freud's and Prince's theories of the *Unconscious* are (1) that Freud's conception is a psychological one and Prince's conception a physiological one, and (2) that Prince's doctrine does not involve the Freudian concept of "resistance."[43] From our "independent" point of view, therefore, Freud's general view is preferable.

[40] *V.* especially, *The Unconscious,* pp. x, 249-254.

[41] *Op. cit.,* p. 131.

[42] *Ibid.,* p. 149.

[43] It does not, however, necessarily *exclude* that concept. *V. op. cit.,* pp. 147 f.

But the difference between Freud and Prince in their general theory of the *Subconscious* is more fundamental than this, in that their divisions of the subconscious field are based on entirely different principles. This may be best stated in figurative language by saying that Freud's division is a *horizontal* one, into *levels;* and Prince's a *vertical* one, into *kinds.* Because of the fact that the two classifications are based on different *"principia divisionis,"* the divisions themselves are entirely compatible with each other, and we shall find that each has a value for our complete system. Let me further elucidate these points, and in so doing suggest some modifications in the usual terminology and classification which will have, I think, the value of greater simplicity and comprehensiveness.

As to *Freud,* if we disregard, as we have a right to do, his specific theories as to the Unconscious and "resistance," we have left three *levels of psychical existence*—Conscious, Foreconscious, and Unconscious—distinguished fundamentally as regards the relative *degree of intensity* of the various contents. The term (1) *Conscious* may then be applied to any *active* psychical state, whether actually part of the personal stream, as is normally the case, or dissociated from it (*i.e.,* "coconscious" *v. inf.*). The term (2) *Subconscious* may be applied to all *inactive* (dormant or potential) states—those below the "threshold of consciousness." The latter would again be divisible into (a) the *Foreconscious*—the aggregate of those contents which may at any time rise into consciousness on attaining the requisite degree of intensity; and (b) the *Unconscious*—the aggregate of all contents which cannot rise into consciousness without first passing through the Foreconscious, and only under special conditions whose exact nature is not yet understood.

Prince's concept of the Coconscious, however, belongs to an entirely different category from the Foreconscious and the Unconscious, and always indicates an abnormal, if not necessarily a pathological, condition of mind. The term refers to any *active* (i.e., conscious, as this term is defined in the pre-

ceding paragraph) psychical states which are dissociated from the personality.[44] The term "conscious," in this usage, would apply equally to the personally conscious (to which we have heretofore restricted it) and to coconscious states; the latter becoming, therefore, a subdivision of "conscious" rather than of "subconscious." Thus the division into the personally conscious and the coconscious is a *"vertical"* division of mind, quite distinct from and additional to the "horizontal" division into "levels."

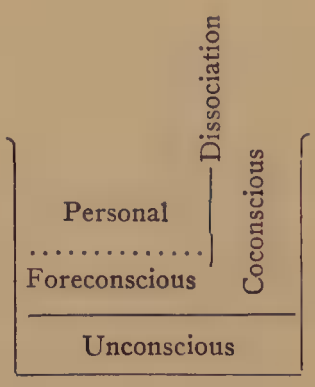
I append several tables and diagrams to illustrate different aspects of our doctrine as elucidated in this section.

TABLE X

CLASSIFICATION OF PSYCHICAL STATES

1. *Conscious* (any *active* psychical state).
   a. *Personally Conscious.*
   b. *Coconscious* (active dissociated state).
2. *Subconscious* (all *inactive* psychical states: potentially conscious).
   a. *Foreconscious* (can easily be recalled).
   b. *Unconscious* (cannot easily be recalled: inactive dissociated states).

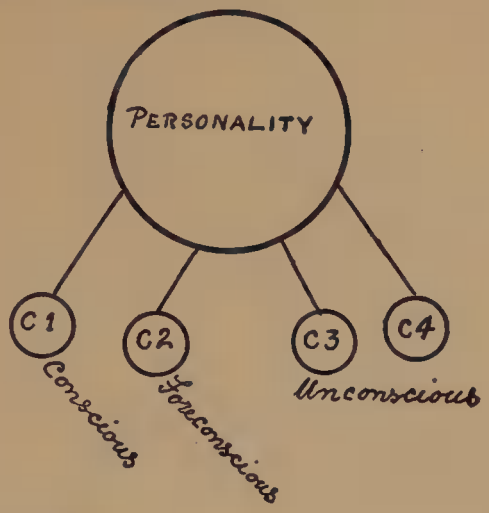
	Continuous	*Dissociated*
Conscious (active)	Personal	Coconscious
Subconscious (inactive)	Foreconscious	Unconscious



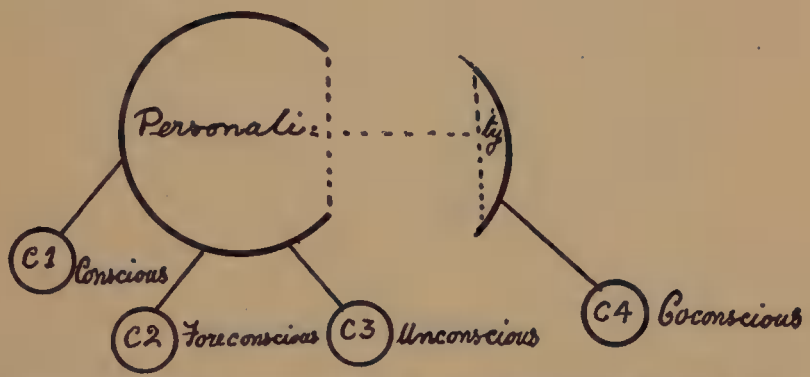
[44] The Unconscious is, of course, by its very nature, *always* dissociated.

PERSONALITY AND ITS STATES

Under Normal Conditions



Under Dissociation



(The upper figure symbolizes in greatly simplified form a fully synthetized mind, the lower figure a case of dissociation. C1, 2, 3, and 4 indicate four contents—C1 a content of personal consciousness; C2 a foreconscious content; and C3 and C4, in the upper figure, two unconscious contents. The last of these, C4, is represented in the lower figure as manifesting itself coconsciously.

5. *Conclusions.*

121. *Principles of Psychological Explanation.*—In order to bring to a close our long discussion of the subconscious, and therewith our entire program, it is necessary to recall at this point what was said in a former chapter concerning the two kinds of scientific explanation which may be employed by the

psychologist in explanation of his phenomena (54, 55)—a *phenomenal* explanation in terms of other phenomena, and a *conceptual* explanation in terms of concepts specially constructed for the purpose. Also we must renew our acquaintance at this time with our earlier Principle of Psychological and Physiological Independence,[45] according to which psychologists are precluded from introducing physiological concepts into their explanations of psychological phenomena.[46] The subconscious itself, of course, was postulated by us originally to save this principle and to make independent psychical causation possible (95), and these two last chapters of our book are devoted to a defence and explication of this concept.

122. *The Explanation of Memory.*—As remarked before (114), "the great test of theories of the subconscious is the problem of memory." The explanation in terms of unconscious cerebration has been rejected because it violates the principle of independence, even if no other argument were valid against it. Let us see how advocates of the subconscious would explain the phenomenon.

In the first place, it must be recognized that *"the phenomenon"* referred to *is not memory as a process, but the image* which we call the "memory-image." *Memory itself is a psychological concept* "constructed to fill up the gap in the phenomenal psychic series"—to explain the recurrence of previous experiences, and satisfy the demand for continuity in the interval, without abandoning psychology for physiology.[47]

All I experience directly or observe, for example, is a picture in my mind of a New England landscape, or a scrap of melody, or an odor of roses where no roses are. In one way or another I discover the identity of this imaged scene or melody or fragrance with some actually perceived experience of yesterday or last summer—*i.e.*, I "recognize" the image as

[45] Sect. 86(2), and note to that section.

[46] On these two points, *v.* Hart's chapter in *Subconscious Phenomena*, pp. 118-123. This entire chapter is probably the best essay on the subconscious that has ever been written.

[47] Hart, *op. cit.*, p. 123.

a "reproduction" of some previous experience of my own, and therewith dub it a "memory-image." Why? The phenomenon is the image as a content of my mind now, *plus* its resemblance to the perception at some former time: "we assume, in order to satisfy our demand for continuity, that it has in some way existed during the interval, and we invent the conception of memory to explain this continued existence."[48] But the image, being by its very nature transitory, did not exist in consciousness in the interval: it must, therefore, if psychical at all, as the principle of independence demands, have been *subconscious.*

This "storehouse theory of the subconscious," as it is sometimes called by its enemies, is often criticized on the ground that as mental processes are by their very nature transitory, memories cannot be said to have any psychical existence whatever in the interval between perception and recall. "Psychical processes," says A. H. Pierce, "are evanescent affairs that cannot under any circumstances be stored. To try to store a psychical process would be like trying to retain the flame of a candle after the candle itself had been consumed. All that one can possibly mean by such storage is that the cerebral modifications are still existent as latent dispositions, ready again to function under adequate provocation."[49] But though this is true, no doubt, of *conscious phenomena,* it does not affect the validity of the *concept of the subconscious,* which is constructed for the very purpose of accounting for the phenomenon of the "memory-image," among other equally important psychological phenomena as discussed above (101-103).

To explain the phenomena physiologically, however, as Prince and Münsterberg and Pierce do is not only to violate the principle of independence, but is to make no advance whatever toward a phenomenal explanation, since "brain patterns," "neurograms," and "physiological dispositions" in gen-

[48] *Ibid.*

[49] Garman, *Studies in Philosophy and Psychology,* p. 343.

eral are as conceptual and hypothetical as "psychical dispositions" and "latent memories."[50] "Translating memory into the physical series does not make it a phenomenal fact: it must inevitably remain a conception. And if memory from both points of view is merely a conception, then surely if we are talking of the recurrence of mental phenomena, it is a *psychological* conception."[51]

123. *Explanation of the Varieties of the Subconscious.*—By its very nature, the subconscious can never become an object of introspection, for as soon as we are able to introspect a subconscious content it by this fact becomes conscious. Rather is the subconscious an *inference from the observation of behavior,* just as is our knowledge of *consciousness in other persons.* "We have actual experience only of our own conscious phenomena—we deduce the conscious phenomena of others" from their speech and actions; and our knowledge of the subconscious in ourselves and others is derived in the same way.[52] For example, when an automatist enters into conscious conversation with another person, and at the same time writes automatically the solution of some problem whispered into his ear by a third, we infer intelligence in both cases equally.

But the term "subconscious" has been used by various authors to denote such different kinds of phenomena that no one method of explanation is applicable to all of them.[53] In reviewing in our minds the various usages and different varieties of the subconscious as we have been considering them, we find ourselves coming to the following conclusions:

[50] Sidis, *Foundations,* pp. 184, 190, 212.

[51] Hart, *Subconscious Phenomena,* p. 124. Italics mine. It is interesting to note that in Prince's own chapter in *Subconscious Phenomena* (p. 98), he admits that with regard to the subconscious he, as a parallelist, finds "no difficulty in accepting both a physiological and a psychical interpretation." A complete explanation of any human phenomenon must, of course, allow for both (34, 35), but the two principles of explanation should not be confused (86(2)).

[52] *Op. cit.,* pp. 127 f.

[53] *Ibid.,* p. 140.

(1) The *"ultra-marginal view"* of the subconscious is applicable only to what we have come to call the *Foreconscious.*

(2) This *Foreconscious,* and Prince's *Coconscious,* are *phenomena,* as truly as consciousness itself is a phenomenon. The Foreconscious is a phenomenon just as is the other side of the moon, which no one has ever observed, but which is inevitably inferred, not only to exist, but to be merely a continuation of, and so of the same nature with, the side which can be directly observed. And the Coconscious is a phenomenon for the same reason that a star which has never been seen through the telescope, but has impressed itself upon the photographic plate, is a phenomenon.

(3) The *Unconscious,* on the contrary, is not a phenomenon at all, but a *concept* constructed for the definite purpose of explaining phenomena which seem to be proper subject-matter for the psychologist, and yet are not parts of the conscious or the ultra-marginal field.[54] We know nothing of its nature, but only of its manifestations.

This concept of the Unconscious is a concept of "potential psychical energy," analogous to that of "potential physical energy" with which modern physics has made us so familiar. It is as valid and as valuable for psychology as the concept of "potential physical energy" is for physics or that of "potential brain-cell energy" for physiology.[55] "We thus owe to Freud," says Hart, "the first consistent attempt to construct a conceptual psychology":[56] whatever we may think of his special psychopathological theories, we cannot take from him the credit of laying the foundations of a true independent science of psychology.[57]

[54] *Ibid.,* pp. 130 f.

[55] *Ibid.,* p. 119.

[56] *Ibid.,* p. 131.

[57] Jung has succeeded in overcoming to a large extent the onesidedness of Freud's doctrine of the "libido," or the energy of the Unconscious, and a complete treatment of the subject should no doubt include this modification by the well-known founder of the "Zürich School." This must be left, however, for some future time. (*V.* especially, Jung's *Theory of Psychoanalysis,* Chap. III, etc.)

124. *Sidis's Criticism of the Doctrine of The Unconscious.* —Dr. Sidis, doughty champion of the subconscious as he is, is nevertheless a severe, and by no means always a fair, critic of the Freudian psychology. His objections are three—the first being directed against the general principle of conceptual explanation, the others against the concept of "unconscious ideas."

(1) The *principle of conceptual explanation,* Sidis regards as *fantastic*—as a revival of the Herbartian form of associationism (12, 13), in which mental contents (Herbart's "concepts") are treated as metaphysical "reals," "forces," which "conflict with" and "resist" one another.[58] The weight of this criticism is directed against Hart's interpretation, but, as the latter has replied to an earlier criticism of the same purport, "all sciences are compelled" to treat their subject-matter "more or less arbitrarily" and artificially, for their own practical and theoretical purposes.[59] The associationists, however, regarded their elements ("concepts" or "ideas") as metaphysically real, whereas the "conceptual theory of the unconscious" admits them to be artificial.

Sidis also criticizes the *concept of "unconscious ideas"* as (2) *baseless* and (3) *self-contradictory.* Under the former head he insists (2) that any "hypothetical agency must either be a fact directly observed in nature, or a fact which can be verified later on."[60] In reply we assert that though it is true that the Unconscious has not been and never can be observed, any more than many of the entities of the natural sciences, it is nevertheless a necessary inference from facts which have been observed in our mental "nature," and its *results* have been verified innumerable times. Furthermore, it only claims to be a *provisional* explanation, to be made use of so long as theoretically and practically valuable, and until some more

[58] *Foundations,* pp. 199-201.
[59] *Subconscious Phenomena,* p. 137. *Cf.* our Chapter IV.
[60] *Foundations,* p. 201.

satisfactory one within the limits of psychology can be offered.

Finally, (3) Sidis's alarm concerning the danger of introducing into psychology "the self-contradictory impossible concept of unconscious conscious ideas," which he thinks to be "equivalent to the assumption of an unconscious consciousness,"[61] is, as our previous discussion should have made clear (111), quite unwarranted. "Unconscious ideas" are no more self-contradictory than "subconscious" ones.

Sidis's criticisms of Freud's specific psychopathological doctrines concerning "repression," sexuality, etc.,[62] need not here concern us, since it is not our present aim to demonstrate the validity of *any* of Freud's concepts.[63] These doctrines are inferences from Freud's study of dreams and abnormal phenomena, but they do not in any way affect his general theory so far as we have adopted it.

It is well to note, however, that Dr. Sidis is right, and well within his province as an advocate of an independent psychology, in his criticism of *Prince's physiological theory* of the Unconscious.[64] "'Unconscious' brain processes are problematical entities" indeed, for which there is no direct evidence, and they are quite valueless for psychology.

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[61] *Ibid.,* p. 202.
[62] *Ibid.,* p. 199.
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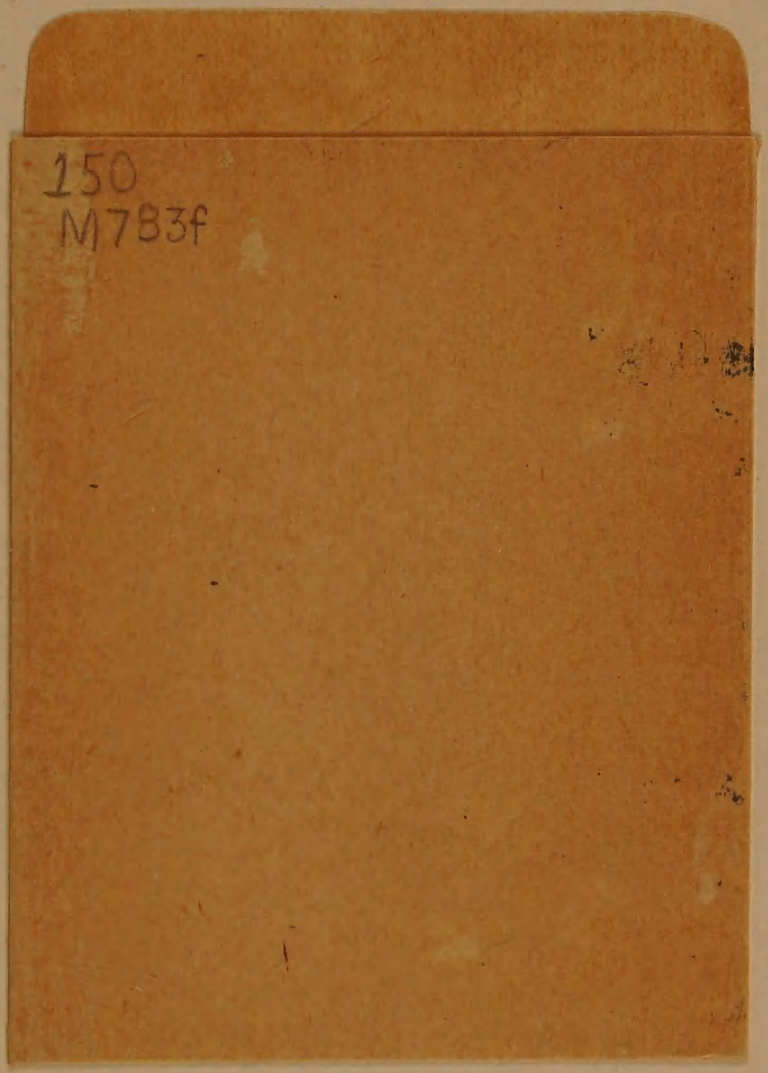

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